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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MAC Control  
No. 115803

# MICROFILMED

MAR 17 1988

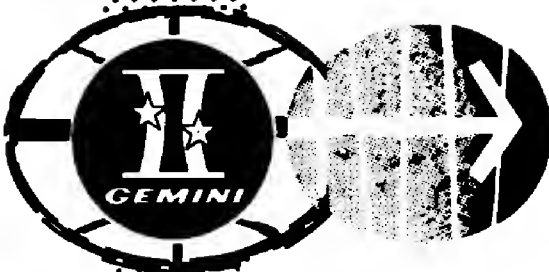
(Title Unclassified)

GEMINI IX-A VOICE COMMUNICATIONS

(AIR-TO-GROUND, GROUND-TO-AIR AND ON-BOARD TRANSCRIPTION)

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1

CC Gemini IX, this is Houston reading you loud and clear. Like to advise you that the Address 72 that we'll be looking for is 25743.

P Okay. Got it, Neil. 25743. Thank you.

C Hello, Tanks. This is Gemini IX. How do you read on UHF?

CC Roger. Tank is reading you loud and clear, Gemini IX. How me?

C Roger, Gordo. Loud and clear.

CC Okay.

C Hello, Flight. Gemini IX. How do you read on the UHF?

CC Read you loud and clear, Gemini IX.

C Roger. Loud and clear.

CC Okay. Good luck.

CC Gemini IX. How do you read on your UHF?

C ... Gemini IX. I read loud and clear ... the final count down.

CC Roger. Have a good flight.

C Okay, Bill. Thanks for the support.

C The plan is check. Guess everything's good. Lock, lock.

P Everything's locked here.

C Roger. Chair up.

P I still hook up.

CC Roger.

CC I pick up T minus 3 in 2 minutes.

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C Looks like the clouds are going away, Gene.

P Yes. It's beautiful out there. Got the count about 1 minute?

P Houston CAP COM, Gemini IX.

CC Go ahead, IX. Houston reads you loud and clear.

P That 7 - 25743 was post-IVAR burn. Is that correct?

CC That's right.

P Okay.

CC Pick up the count in 20 seconds.

CC Gemini IX. How do you read ... ?

C Gordo, Gemini IX reads you loud and clear.

CC Very fine.

C Roger. Thanks a lot.

CC ... count on my Mark.

CC 3, 2, 1,

CC MARK.

CC T minus 3.

CC Roger.

P Come on light!

CC Gemini Support SPC. Do you verify transmission?

P No light in here.

C Wowee!

CC MARK.

CC Minus 2 minutes, Gemini IX.

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3

C Roger.

CC DCS, STC. Sequence 43.

C And I think we're going to make it, Gene.

P Yes.

C That's why they worked up that new procedure.

CC Gemini IX, PC. Launch vehicle is transferring internal power.

CC Stand by for engine gimbaling. You copy, Gemini IX?

P Roger. Standing by.

C (Laughter)

P What do you know?

CC Minus 1 minute.

P Okay, TP. Let's get him.

C We'll have a good one, Gene.

C Stand by for the power.

CC Stage 2-P valves coming open in 5 seconds.

CC Minus 40 seconds.

P Wow!

C That was good one.

CC 30 seconds.

CC T minus 20.

CC T minus 10, 9, 8, 7, 6, 5, 4, 3, 2, 1

CC IGNITION.

00:00:01 CC LIFT-OFF!

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00:00:02 C We're on the way! Clock is started.

00:00:08 P Beautiful, Tom! We're going!

00:00:10 C Yes.

00:00:16 P Cabin is starting to seal.

00:00:18 C Roll Program initiated on time.

00:00:21 CC Roger. Roll.

00:00:23 C And Roll complete.

00:00:24 CC Roll complete.

00:00:26 C Pitch Program initiate.

00:00:27 CC Roger on the Pitch.

00:00:33 P Looks real good here, Tom.

00:00:40 P Boy, we're really moving out now!

00:00:41 CC Lift-off 13:39:33! 13:39:33!

00:00:42 C Right! We're on our way.

00:00:44 P Gee! Are we moving!

00:00:46 C We're moving now, Gene.

00:00:47 P Holy Smolie!

00:00:48 C We've only got 1-1/2 g's.

00:00:50 CC MARK.

00:00:51 CC 50 seconds.

00:00:53 C Roger. Mode 2, Neil.

00:00:55 P And cabin sealed at 6.0.

00:01:01 CC Roger on the cabin.

00:01:04 C Starting to vibrate and shake.

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5

00:01:06 P Boy, I can't see in that sun!

00:01:21 C Can't see a thing.

00:01:22 P Can't see anything.

00:01:24 P Everything looking good so far.

00:01:27 C Neil, ... got the sun right in my face.

00:01:32 CC We didn't copy that, Tom.

00:01:42 C I can't see a thing. The sun's right in my face ...

00:01:44 CC Still didn't copy you, Tom.

00:01:46 P Roger. We have the sun in our eyes. Keep us closely advised, Neil.

00:01:48 CC Okay. I've got you now. You're in Mode 2 now. Advise no DCS updates now.

00:01:56 P No ...

00:01:58 CC No DCS. Okay, Slim.

00:02:00 P Roger. Understand. Negative DCS update.

00:02:02 C ... can't reach it.

00:02:09 C We'll have to keep my hand up here.

00:02:10 P Okay ...

00:02:17 P Okay. Needles looking good. Everything looks good.

00:02:19 CC You're GO for Staging, Gemini IX.

00:02:21 C Tell them we're GO.

00:02:22 P Roger. Understand. We're GO. And we are GO!

00:02:24 CC Roger.

00:02:26 P I have the horizon, Tom.

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00:02:28 C Yes. Good show.

00:02:30 C Okay. 30, 1, 2.

00:02:33 P Oh, there's the fireball!

00:02:37 C Yes, we had a beautiful fireball. Staging is GO.

00:02:40 CC Roger.

00:02:41 C Okay. High rate.

00:02:42 P Okay.

00:02:45 C Okay. We pulled 5 g's for the first stage.

00:02:48 C Something is burning.

00:02:49 P It's start and stop.

00:02:50 C Guidance Initiate, Neil.

00:02:51 CC Okay. Guidance.

00:02:56 P And she's coming back in.

00:02:58 C Steering looks realgood, Neil.

00:02:59 P Needles are coming - oh, the horizon is beautiful!

00:03:00 CC Roger.

00:03:04 P Oh, that's fantastic!

00:03:06 C I've got ...

00:03:14 P Oh, Tom. That's great!

00:03:18 P Okay. She came through booster firing and the -

00:03:24 P Everything's looking good so far, Tom.

00:03:27 P 03:25.

00:03:28 C Looks good.

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7

00:03:30 P Okay. We've got 1/2 degree negative yaw and 1/2 degree negative pitch on the needle.

00:03:37 P Oh, Tom!

00:03:38 C Take another look.

00:03:40 P Oh, that's so pretty!

00:03:43 P Okay, Tom. Everything is looking good so far.

00:03:48 C Run a little longer, we're only pulling 1-3/4 g's.

00:03:52 P Okay, the IGS - showing about 1 degree negative yaw, and 1 degree for the pitch.

00:04:05 P Make that a 1/2 degree, Tom.

00:04:09 P How fantastic this is!

00:04:18 P Okay. Here comes the g loading. It's going - -

00:04:20 C Yes. We're going through. Hey, we're pulling 2.

00:04:22 CC IX. You're GO on the ground.

00:04:26 C Roger, Houston. IX GO here.

00:04:27 P All systems are GO, Tom. We're looking good.

00:04:29 CC Advise you can expect some large - out-of-plane on the IVAR which won't burn.

00:04:32 C Roger.

00:04:33 CC And you may have a little bit of out-of-plane on the steering, building up at the end there.

00:04:37 C Okay. We'll be looking for it, Neil.

00:04:39 P Roger. We're showing 0 pitch, and yaw is starting to build up at 1 degree now.

00:04:47 CC Roger.

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00:04:50 C Almost 3 g's.

00:04:57 P Oh baby! Keep going, just keep going!

00:04:61 C ... we're getting it now.

00:04:63 P How's it look, Neil - Tom?

00:05:05 C 5 minutes and ... 5.8 g's.

00:05:06 P Okay. We're starting to build up our yaw. Pitch is right on.

00:05:11 C Okay.

00:05:14 CC MARK.

00:05:15 CC V/VR is .8.

00:05:16 C Roger. Pulling 3 flat.

00:05:23 P There it is - our yaw going.

00:05:28 C Okay. 30, 1, 2, 3, 4, 5, 6, 7, 8, 9.

00:05:41 P There it is.

00:05:42 C SECO. ... Zero.

00:05:44 CC Roger. SECO.

00:05:45 P You're on.

00:05:47 C IVIs read 60 forward.

00:05:50 CC Roger. 60 forward. You are GO for IVAR.

00:05:52 P 25706.

00:05:54 C Okay.

00:05:55 CC Roger. Over IVI.

00:05:56 C Roger.

00:05:58 P 714, Tom.

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9

00:06:02 C Okay. Stand by.

00:06:05 C Go ahead.

00:06:08 P Plus 27 on the IVAR.

00:06:09 C RATE COMMAND.

00:06:12 C I'm reading 17 forward, 26 left and 153 down.

00:06:19 CC Roger.

00:06:21 P 21, Tom. Forward.

00:06:25 C Give us ...

00:06:26 P 21 forward on this.

00:06:28 C Okay.

00:06:29 P Houston, Gemini IX. At SECO, Address 72 reads  
251 - 714; 95 is plus 0021.

00:06:40 C Okay.

00:06:42 CC Roger. Say again Address 72. That's 25714.

00:06:47 C What do we have now, Gene?

00:06:49 P Okay. Let me read it.

00:06:53 P Okay. 14 to go, Tom.

00:06:54 C 14 to go.

00:06:56 P Have you tested it at all?

00:06:57 C Yes, I tested it.

00:06:59 P Okay. 14 to go.

00:07:01 C Roger.

00:07:07 C How many do we have to go now?

00:07:08 P Okay. 6 to go.

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00:07:10 C Roger.

00:07:12 P Your IVAR's looking good on it.

00:07:15 C About now.

00:07:16 P Okay. Looks zero.

00:07:18 P Where did you thrust? We're going up in the air, aren't we?

00:07:20 P Did you test on the needles?

00:07:21 C Yes!

00:07:22 P Okay.

00:07:25 C Okay. We all set?

00:07:28 P Okay. All set. Reading 52.

00:07:30 C That's a good one.

00:07:34 C Pitch down here.

00:07:42 C That's a nice one.

00:07:52 C Plat and ...

00:07:53 P Okay.

00:07:59 CC Gemini IX, Houston radio check.

00:08:01 C Houston, read you loud and clear.

00:08:03 CC Okay. Reading you the same.

00:08:04 P Houston, post-burn 72 reads 25749; 95 is minus 0002; 52 is all zeros.

00:08:14 CC Roger. Copy.

00:08:17 P Okay. Let's go on the Insertion Check List, Tom. Your Boost Insert, SAFE.

00:08:21 C Roger.

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11

00:08:26 P Look at the horizon area.

00:08:28 CC Roger. Gemini IX. Your 1-Alpha time is 15:55.

00:08:38 P Gemini IX. Roger. 15:55, 1-Alpha.

00:08:44 P Okay, Tom. Retro Rocket Squibs, SAFE.

00:08:46 C Roger. SAFE.

00:08:47 P Boost Insert, SAFE; Maneuver Controller OFF and stowed.

00:08:50 C Roger.

00:08:55 P Okay. Sequential Light Test.

00:09:01 P Whenever you get a chance, our restraints are coming.

00:09:17 P Okay.

00:09:20 P This is on. Let's get this on.

00:09:22 C Houston, Gemini IX. The Primary Scanners look good.

00:09:26 CC Roger. Understand. Your insertion is 86 by 150.

00:09:31 C Roger.

00:09:34 P Roger. Copy 86 by 150.

00:09:35 CC That's affirm.

00:09:37 C And Fuel Quantity is 95 percent.

00:09:40 CC And your lift-off time was on time, 39:33.

00:09:47 C Roger. ... in-plane.

00:09:50 P Roger. Copy. 13:39:33 lift-off.

00:09:54 P Okay, Tom. Let's go over your Sequential Light Test.

00:09:59 C Okay. Go ahead.

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00:10:00 CC 20 seconds to LOS.

00:10:02 P Okay. I'm good here.

00:10:05 C GREEN.

00:10:06 P GREEN.

00:10:08 C Got them.

00:10:09 P Okay. We've got them.

00:10:11 C Good show.

00:10:12 P Okay. Your left Secondary O<sub>2</sub>, CLOSED.

00:10:19 P Okay. You can jettison your window cover, and I'll finish mine.

00:10:22 P Main circuit breaker to the GO. (Battery test)

00:10:31 P Okay. Checking each amp and volt reading.

00:10:33 C Lots of goodies on there.

00:10:35 P Continuing with Antenna Electrical Check.

00:10:37 C Get these burns okay?

00:10:41 P I'll get the firing check.

00:10:45 P Main line looks good. She should go around some more.

00:10:47 C There she goes.

00:11:02 P Did she go?

00:11:03 C Yes.

00:11:04 P Okay. Number 1 battery is about 23; Number 2 is 24; Number 3 is 22; and Number 4 is 23.

00:11:23 P Fuel cells are looking pretty good, Tom. Get your gear stowed and then I'll get ...

00:11:30 C Okay. The scanners looking good.

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13

00:11:35 P Okay. Let me get this thing off so I can open my - visor.

00:11:47 C It was quite a ride, wasn't it?

00:11:50 P Pretty fantastic.

00:11:52 C ...

## CANARY ISLANDS

00:16:33 CC Gemini IX, Canary CAP COM.

00:16:35 C This is Gemini IX here.

00:16:37 CC Roger. Have your Phase-Adjust Maneuver here, if you are ready to copy.

00:16:40 P Any time.

00:16:41 CC Roger. GET B: 49 plus 05; Delta-V, 73.6; burn time, 1 plus 39; yaw 0, pitch 0; Address 25, 00736; Address 26, all zeros; Address 27, all zeros; thrusters, aft; Maneuver, Posigrade. You're Phase-Adjust. Do you copy?

00:17:15 P Canary, say again all through yaw 0 and pitch 0, please.

00:17:20 CC Roger. Address 25, 00736; Addresses 26 and 27, all zeros; thrusters, aft; Maneuver, Posigrade. Phase-Adjust - -

00:17:38 P Canary, Gemini IX. Roger. I'd like GET B, Delta-V and Delta-T, please.

00:17:43 CC Roger. GET B: 49 plus 05; Delta-V, 73.6; Delta-T, 1 plus 39.

00:17:57 P Gemini IX. Roger. Phase Maneuver is 49 plus 05; Delta-V, 73.6; duration is 1 plus 39; yaw 0, pitch 0; 25 is 00736; 26 all zeros; 27 all zeros; aft thrusters; Posigrade.

00:18:17 CC Roger. That's correct.

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00:18:19 C And the Insertion Check was just complete.

00:18:21 CC Roger. Thank you.

00:18:23 CC I have your 2-1 update.

00:18:27 C Can we have a moment?

00:18:29 CC Say again, Gemini IX.

00:18:30 C If you'll stand by, we'll copy in a minute.

00:18:32 CC Roger.

00:18:52 C Canary, Gemini IX. Go with 2-1.

00:18:53 CC Roger. GET RC: 01:26:31; RET 400K, 07 plus 59; RET RB, 14 plus 37; roll left 85, roll right 95.

00:19:17 P Gemini IX. Roger. 2-1 GET RC is 01:26:31; 400K is 07 plus 59; reverse bank at 14 plus 37; left 85 degrees, bank right 95.

00:19:31 CC Roger, Gemini IX. Stand by for your UHF check when you are ready.

00:19:36 P Roger. Switching over to UHF 2. We'll give you a call in 30 seconds.

00:19:39 CC Roger.

00:19:54 P Canary, this is Gemini IX on UHF. How do you read me?

00:19:57 CC Roger. Read you loud and clear, Gemini IX. Let's go back to Number 1.

00:20:00 P Number 1.

00:25:02 CC Gemini IX, this is Houston.

00:25:04 C Roger. This is Gemini IX. Go.

00:25:07 CC Roger. I'd like to give you GET time hack. It will be 25:15 in three seconds.

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15

00:25:16 CC MARK.

00:25:17 C We're right on. Our water boiler is still ...  
Neil.

00:25:21 CC Okay. And we're holding you 86 by 144 at  
Bermuda. I'd like to give you a new maneuver.

00:25:31 C Roger.

00:25:33 CC Roger. We have apogee at 147 now out of Canary.  
We'll give you the maneuver changes based on  
Canary.

00:25:41 CC Okay. You ready to copy?

00:25:43 P Stand by. Ready to copy. Go.

00:25:46 CC Okay. GET B is 49:03; Delta-V, 75.0; burn time,  
1 plus 40; Address 25 is 00750. All the rest  
are the same.

00:26:11 P Okay, Neil. I've got GET B at 49 plus 03;  
Delta-V, 75.0; duration is 1 plus 40; yaw 0,  
pitch 0; 25, 00750; 26, 0; 27, 0; aft thrusters;  
Posigrade.

00:26:30 CC That's correct.

## TANANARIVE

00:35:05 CC Gemini IX, Houston.

00:35:07 C This is Gemini IX, Houston. Read you loud and  
clear.

00:35:10 CC Roger, Tom. We have a pointing star for you.  
It's Theta Aquilae. That's 7 degrees down and  
1 degree right.

00:35:24 C Roger.

00:35:28 CC It's Theta Aquilae. It's on your SC-1 chart and  
it's close to Altair.

00:35:34 C Roger.

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00:36:22 CC Gemini IX. Would you take - check Tape Recorder Power circuit breaker, please.

00:36:36 C Houston, Gemini IX ...

00:36:40 CC We're reading you a little bit garbled, Tom. That was check your Tape Recorder Power circuit breaker?

00:36:47 C Roger.

00:49:04 P I felt that one! I felt that one, Tom!

00:49:09 P I sure felt that.

00:49:23 C Go.

00:49:25 P Okay. The burn time is 1:40 so we should read - 5043 at the completion time. Right?

00:49:30 C Right.

00:49:39 P We still have about 40 - 50 percent yet to go.

00:49:59 P Feels like I urinated out in my pants.

00:50:01 P Oop! That went in the report.

00:50:04 C That's all right. ... still burning?

00:50:08 P Yes.

00:50:11 C Okay.

00:50:16 P The quantity is 5043 on the counter and I get to go on 80.

00:50:28 P Okay. I have about 13 to go. I'm 80.

00:50:32 P Going over 82. Got about 10 seconds to burn.

00:50:40 C Okay. Hit it.

00:50:42 P Okay. There's 82. 82 is good.

00:50:47 P All zeros. 81 plus 2. That's good enough.

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17

00:50:59 P Okay.

00:51:04 P He wants - -

00:51:05 C Hit it again ... two tenths is good enough.

00:51:11 P One tenth.

00:51:12 C One tenth plus - -

00:51:18 P Plus one tenth on 80, plus two tenths on 81 and zero on 82.

00:51:20 C - - Good show!

CARNARVON

00:51:21 C Hello, Carnarvon. Gemini IX.

00:51:24 CC Go ahead, Gemini IX.

00:51:25 C Roger. Completed our purge right on time; residuals were for ... We're standing by for the Accelerometer Bias Check. We'll give you a call as soon as we have all addresses to zero.

00:51:41 CC Roger. Would you give us that residual again, please?

00:51:45 P Roger. Address 80, plus one tenth; 81, plus two tenths; 82, was zero.

00:51:55 CC Roger. Now we'll give you a GO on the radiator. You can place the Evaporator switch to NORMAL.

00:52:01 C Roger. NORMAL.

00:52:07 C We're showing all zeros for 25:67 ... Ready to START COMP.

00:52:12 CC Stand by one, Gemini IX.

00:52:42 CC IX, Carnarvon.

00:52:43 C Carnarvon, IX. Go.

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00:52:44 CC Carnarvon's having some telemetry problems. I'll give you a call as soon as we're set up here.

00:52:47 C Okay.

00:53:09 CC Gemini IX, Carnarvon.

00:53:10 C Gemini IX. Go.

00:53:12 CC Roger. Will you cycle back to PRELAUNCH and then back to CATCH-UP, please?

00:53:15 C Roger. How about going to RENDEZVOUS position?

00:53:17 CC Okay.

00:53:22 CC Roger. We'll start the Accelerometer Bias Check.

00:53:25 C Roger. START COMP this ...

00:53:30 C Do you have us GO for 16-1?

00:53:34 CC Roger. You're GO for 16-1.

00:55:24 CC Gemini IX, Carnarvon. Would you place the Quantity Read switch to ECS O<sub>2</sub>?

00:55:29 C Come to ECS O<sub>2</sub>.

00:55:50 CC FUEL CELL O<sub>2</sub>.

00:55:53 C Roger. FUEL CELL O<sub>2</sub>.

00:56:21 CC FUEL CELL H<sub>2</sub>.

00:56:24 C H<sub>2</sub>.

00:56:40 CC The Quantity Read is OFF.

00:56:45 C Roger. It's OFF.

00:56:46 CC Would you give us an OAMS Quantity readout, please?

00:56:55 C OAMS Quantity reads 82 percent.

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19

00:56:58 CC Roger.  
00:57:40 CC Gemini IX, Carnarvon. We've completed our  
accelerometer bias summaries.  
00:57:45 C Fine.

## CANTON

01:10:07 CC Gemini IX, Houston standing by.  
01:10:11 C Roger, Houston.  
01:12:23 CC Gemini IX, Houston. Can you tell us whether  
you saw any drift on your IVI during your  
Accelerometer Bias Checks?  
01:12:30 C Roger. Just did now. ... we saw the UP go to  
a 1 ... UP to 1, very small.  
01:12:43 CC Roger. UP went to 1 and LEFT-RIGHT went to 1.  
Is that right?  
01:12:47 C That's right.  
01:12:49 CC Okay.  
01:12:50 C Want another one?  
01:12:52 CC Stand by. I don't think it's required.  
01:12:55 C Roger.  
01:12:56 CC We will update your Accelerometer Bias over the  
States.  
01:13:03 C Houston, say again.  
01:13:04 CC We will update your Accelerometer Bias over the  
States.  
01:13:08 C Roger.

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## HAWAII

01:17:37 CC Gemini IX, Hawaii.

01:17:39 C Hawaii, Gemini IX.

01:17:41 CC Roger. You look real good here on the ground. We have a 250-nautical-mile-range update for you.

01:17:48 P Roger. Stand by.

01:17:52 C Go ahead, Hawaii.

01:17:54 CC Roger. GET: 01:40:00.

01:18:02 P Roger. 01:40:00.

01:18:05 CC We also have a Flight Plan update for you.

01:18:08 C Roger. Go ahead.

01:18:11 CC Node: 01:13:39; Rev 1, 172.6 degrees west; right ascension, 20:09.

01:18:34 C Roger. Node: 01:13:39; Rev 1, 172.6 degrees west; right ascension, 20:09.

01:18:46 CC Roger. We have turned the L-Band ON on the ATDA and it looks good.

01:18:50 C Real fine.

01:21:12 CC Gemini IX, Hawaii. We're at LOS minus 1 and all systems look good.

01:21:17 P Gemini IX. Roger.

## CALIFORNIA

01:28:08 CC Gemini IX, Houston.

01:28:13 C Houston, IX here. Go.

01:28:16 CC Roger. Your 180-nautical-mile time is 1 plus 56.

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21

01:28:22 C Roger. 1 plus 56.

01:28:24 CC And 100 nautical miles will be 2 plus 39.

01:28:29 C Roger.

01:28:33 CC Okay. This current maneuver plan that we're working on, Tom, has a Delta-H at 12 nautical miles and a TPI at 4 minutes before sunset.

01:28:42 C Roger. Delta-H, 12 miles; TPI at 4 minutes before sunset. Sounds real good.

01:28:48 CC Roger. There will be no stars for either burn.

01:28:52 C Say again.

01:28:53 CC You won't have any stars for either burn. One's in daylight and one's pointed down.

01:28:58 C I've come to the decision that it's real hard to see stars.

01:29:02 CC Roger.

GUAYMAS

01:29:35 C Houston, Gemini IX.

01:29:38 CC Houston, Tom.

01:29:39 C Roger, Neil. My Left Auxiliary Receptacle - evidently the total unit over there is inoperative, so we're going to make a little makeshift here, and use a cord stretched across the cockpit to the Receptacle Right Auxiliary.

01:29:53 CC Roger. Understand. You're - I guess both sides are on that same breaker, right?

01:30:00 P Right.

01:30:01 C It's definitely in the connector and the connector is loose on the receptacle. There, we've got it.

01:30:06 CC I'm with you.

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01:30:07 C Squared away.

01:30:23 CC Okay. You want to go to PRELAUNCH now, Tom, for the Accelerometer Bias change.

01:30:28 C Going to PRELAUNCH.

01:30:32 C PRELAUNCH.

01:30:35 CC Okay.

01:31:02 CC Okay. Your bias is being changed now, IX.

01:31:07 C ...

01:31:16 CC We didn't read you that time. Understand you did get a light.

01:31:21 C Roger. That's affirmative. Now we're going to take some pictures. How do you read me on the UHF?

01:31:28 CC We're reading you loud with a little bit of garble, Tom.

01:31:32 C Roger.

01:31:33 CC Can you change that receptacle cord from one side to the other for later in the flight?

01:31:41 C It's the receptacle itself, Neil. We're going to still make the effort to complete the rendezvous and check it out.

01:31:48 CC Okay.

01:32:17 CC Advise your bias looks good now, Gemini IX.

01:32:20 C Roger.

HOUSTON

01:39:10 CC Gemini IX, Houston. Got your maneuver message when you are ready to copy.

CONFIDENTIAL

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23

01:39:15 C Gemini IX. Go.

01:39:17 CC Okay. GET B: 01:55:17; Delta-V, 14.6; burn time, 19 seconds; yaw 67, 67 degrees left, pitch 44 up, 44 up; Address 25, 00041; Address 26, 90102; Address 27, 00097; aft thrusters; Posigrade Up, north. That's Corrective Combination. Go ahead.

01:40:07 C Roger. Houston. Gemini IX. On our NCC at GET B: 01:55:17; Delta-V, 14.6; duration, 19 seconds; yaw 67 degrees left, 44 degrees up; Address 25 is 00041, 26 is 90102, 27 is 00097; aft thrusters; Up in north.

01:40:40 CC That's correct and Posigrade. Stand by for NSR as soon as we get it.

01:40:46 C Roger. We understand.

01:41:16 CC Okay. Stand by for NSR.

01:41:19 C Go ahead, Houston.

01:41:21 CC Okay. GET B: 2 plus 24 plus 51; Delta-V, 54.0; burn time, 1 plus 11, that's 1 plus 11; yaw 3 left, pitch 41 down, 41 down; Address 25, 00409; Address 26, 00352; Address 27, 00020; aft thrusters; Posigrade Down, north. That's NSR. Go ahead.

01:42:13 C Roger. NSR: 02:24:51; Delta-V, 54.0; duration is 1 plus 11; yaw is 3 left, pitch is 41 down; 25, 00409; 26, 00352; 27, 00020; aft thrusters; Posigrade Down and north.

01:42:37 CC That's correct. You're on your own now.

01:42:40 C Roger. We're all set to go, Neil.

01:43:04 CC Okay, IX. Give you a GET time hack at 01:43:10.

01:43:11 CC MARK. 01:43:10.

01:43:13 C Roger. We're right on, Houston.

01:43:15 CC Okay.

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01:45:30 CC Gemini IX, Houston. We're about half a minute from LOS. You still have a very small bias in the accelerometer. Looks like, for worse case TPI, we will be off about a couple-of-tenths of a foot per second. You might have a look at it.

01:45:48 C Roger, Houston. Sure will.

01:54:20 C Recording for MCC. The burn is 1 plus 55 plus 17.

01:54:31 P Okay. There's ten.

01:54:54 P Go to RATE COMMAND - there's 13.

01:55:04 C RATE COMMAND.

01:55:06 P 14, 15, 16, -

01:55:20 P MARK.

01:55:22 C Burning.

01:55:25 P Okay. I've got your timing. Should be a 19-second burn.

01:55:39 C MARK.

01:55:42 P That was the 10-second burn right on the money.

01:55:44 C Okay. 82 is zero.

01:55:47 P 82 is zero. 81.

01:55:54 C Two tenths.

01:55:55 P Minus two.

01:55:56 C 81. Do you want to ...

01:55:59 P Let me hit it again.

01:56:01 C Zero.

01:56:06 P 80 is minus ...

CONFIDENTIAL

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25

01:56:07 CC Gemini IX, Houston standing by.

01:56:10 C Roger. Just completed all of the residuals.  
Let it go.

01:56:12 P Skip it.

01:56:13 P Okay.

01:56:27 C There we go. There we go. Call in the residuals  
to him.

01:56:31 P Who's that, Houston or Canaries?

01:56:32 C Houston.

01:56:34 P Houston, Gemini IX. Burn was on time. All re-  
siduals are zero. 80, 81 and 82 all zeros.

01:56:41 CC Very good.

01:56:46 P Okay. Back to PULSE.

01:56:49 C Good show. Back to PULSE.

01:56:51 C Going to RENDEZVOUS.

01:56:53 C Back to CATCH-UP.

01:56:59 C Plat to ...

01:57:01 C Okay. You can put 81 percent after that, if you  
want to. 81 percent limit.

01:57:06 P Houston, Gemini IX. Fuel Quantity is 81 percent.

01:57:09 C ... 81 percent.

01:57:13 CC You're 81 percent.

01:57:22 CC Houston is one minute from LOS.

01:57:25 C Roger. Read you loud and clear.

01:57:26 C Whew! I'm awful glad at this IGS support.

01:57:28 P Yes, so am I.

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01:57:37 P Boy, you sure sit on top of the cockpit, don't you?

01:57:41 C Yes. You feel like you're bent over, head down.

01:57:56 P I lost a pencil somewhere.

01:57:57 C Sure, we'll find it. We'll find it on the ship.

01:58:05 P Well.

01:58:08 P Yes, but in case I break this one, I'll need one in a hurry.

01:58:10 C I've got plenty. I've got two over here - and we're back Alining the Platform.

01:58:20 P Okay.

01:58:21 C ... to CATCH-UP.

01:58:25 CC Houston is one minute from LOS.

01:58:27 C Roger. We're Realining the Platform.

01:58:44 P Okay, Tom, she's all set in. This one is going to be Posigrade Down and north. It's going to be 3 degrees left and 41 degrees down.

01:58:48 C 3 degrees left.

01:58:49 P And 41 degrees down.

01:58:50 C I hope.

01:59:01 P Boy, RATE COMMAND is a heck of a lot tighter than simulation.

01:59:06 C It's really tight.

01:59:10 P Boy! 41 degrees down. That's a big one!

01:59:18 P Do you want to get that center box and stow it, Tom?

01:59:20 C When's the next burn we'll be running?

CONFIDENTIAL

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27

01:59:22 P Next burn is at 02:24:51.  
01:59:27 C 02:24:51. Okay.  
01:59:32 C 02:24:51. Good.  
01:59:35 C Go ahead and start ... start working on it.  
01:59:39 P This cord is a pain in the neck.  
01:59:44 P Let's go to Record, OFF.  
01:59:45 C 4 feet per second.

## TANANARIVE

02:09:16 CC Gemini IX, Houston.  
02:09:35 CC Gemini IX, Houston.  
02:10:05 CC Gemini IX, Houston.  
02:10:08 C Roger, Houston. Gemini IX. Go ahead.  
02:10:10 CC Roger. We're reading you now. Give you a time  
hack here. It will be 2 hours, 10 minutes and  
20 seconds.  
02:10:20 CC MARK.  
02:10:22 C Roger. We're right on.  
02:10:25 CC Okay. And 4 minutes after NSR your pointing will  
be 5.5 degrees above horizontal; azimuth, 0; and  
your range, 109 miles with a Range-Rate of 126  
feet per second.  
02:10:45 C Roger. Understand 109 miles and 126 feet per  
second.  
02:10:49 CC Roger. 5.5 degrees above horizontal.  
02:11:06 C Houston ... Say again.  
02:11:11 CC That elevation was 5.5 degrees.

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02:11:14 C Roger. 5.5.

02:11:17 CC Roger.

02:11:59 C Houston, this is Gemini IX. Were you trying to call?

02:12:03 CC No we weren't, Tom. Advise you are about 150 nautical miles. Have you had any ACQ - radar acquisition blinking yet?

02:12:15 C Not yet, but we'll give you a call when we have it.

02:12:17 CC Roger.

02:13:22 C Houston, Gemini IX.

02:13:24 CC This is Houston. Go ahead.

02:13:25 C Roger. There appears to be a radar lock-on.

02:13:28 CC Roger. Can you read out the range, please?

02:13:35 C We are 129.45 miles and we'll get you a Range-Rate shortly.

02:13:40 CC Roger.

02:13:49 C And we've lost radar lock. I just lost it completely.

02:13:52 CC Roger. Understand you've lost it.

02:13:54 C Came back in again, and out.

02:14:02 C Houston, Gemini IX. We did get a Range-Rate of 201 feet per second. I don't know how good that is.

02:14:08 CC Roger. 201.

02:14:38 C Houston, Gemini IX. We are at 127 and a half miles; Range-Rate, 190.

02:14:44 CC Houston. Roger.

CONFIDENTIAL

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29

02:15:10 C Houston, Gemini IX. Estimate azimuth Range-Rate, 34; elevation, 6-1/2 degrees.

02:15:17 CC Houston. Roger. And we're about 1 minute from LOS.

02:15:23 C Roger. The radar keeps breaking lock just as predicted.

02:15:28 CC I understand.

02:23:41 P Okay. We're coming up for NSR burn at 02:24:51. We've got about a minute to go.

02:23:43 C Let's recycle again back in the ...

02:23:46 P 54 feet per second.

02:23:52 C Okay. Put back to CATCH-UP.

02:23:58 C The needles aren't coming in.

02:24:03 P No.

02:24:05 C Try again. We should have left it then. There we go. Okay. Just leave it there.

02:24:10 P Okay. We're losing the radar lock-on, but that's expected.

02:24:13 C ...

02:24:17 P 24:51, Tom. We've got 30 seconds.

02:24:19 C Okay.

02:24:21 P Are you in RATE COMMAND?

02:24:23 C Roger. In RATE COMMAND.

## CARNARVON

02:24:27 CC Gemini IX, Carnarvon CAP COM. We're standing by.

02:24:29 C Roger. Be burning shortly. Are we on Record?

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02:24:34 P 24:51. You've got 20 seconds.

02:24:37 P On Record. Go to RATE COMMAND.

02:24:39 C Okay. I'll just put it right here to the last one.

02:24:41 P Okay. You've got 10 seconds.

02:24:47 C RATE COMMAND.

02:24:49 C ... 51.

02:24:51 P Okay. It is 47.

02:24:52 P 8, 9, 50, BURN.

02:24:53 C MARK.

02:24:54 C BURN.

02:24:55 P We're burning, Carnarvon.

02:24:58 CC Roger.

02:25:25 P Our radar lock's holding pretty good, isn't it?

02:25:34 P The needle isn't moving each time. I wonder why?

02:25:41 C I don't know.

02:25:49 P Got about 10 seconds to burn.

02:25:53 C Okay.

02:26:01 C Okay. Hit it!

02:26:08 P Okay. 80 - let's see, 80, 81 and 82. You've got to go down just a little.

02:26:20 P Let me hit it again. Okay. Stand by.

02:26:25 C That's good. 82 is one.

02:26:27 P Yes.

CONFIDENTIAL

# CONFIDENTIAL

31

02:26:34 C 81 is 1.

02:26:43 C It's coming in, too.

02:26:51 P Yes.

02:26:52 C Six tenths.

02:26:56 P One squeeze.

02:26:57 C Hit it!

02:26:58 P I don't believe that. Why would - -

02:27:01 C Okay. Just let it go.

02:27:04 C Zero, zero. Make it a zero, okay?

02:27:08 P Carnarvon, this is Gemini IX. Burn is complete. The residuals: 80 is 0; 81 is 1; 82 is 1.

02:27:17 CC Roger. Standing by for your fuel cell purge.

02:27:20 P Roger. Coming up on the purge.

02:27:27 C Did you get the time up there?

02:27:28 P For what?

02:27:31 C Did you start ... ?

02:27:35 P Did I get the time ... ?

02:28:53 C Carnarvon, Gemini IX. Purged hydrogen Sections 1 and 2, got a Delta-P light. Presently purging oxygen Section 1.

02:29:01 CC Roger.

02:32:25 CC Gemini IX, we're 30 seconds to LOS.

02:32:29 C ... Roger. We got about 20 seconds on the Section 2 O<sub>2</sub> purge and I did not get any lights.

02:32:36 CC Roger. Would it be possible for me to get an OAMS Quantity readout from you before LOS here?

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02:32:40 P Roger. Reading 73 percent.

02:32:42 CC Roger.

02:32:47 C Carnarvon, we also need a Bravo.

02:32:49 CC Roger.

02:32:50 CC Gemini.

02:32:51 C Gemini IX, fuel cell purge is complete. Everything looks good.

02:32:53 CC Roger.

## HAWAII

02:50:28 C Hello, Hawaii. Gemini IX.

02:50:30 CC Gemini IX, Hawaii.

02:50:32 C Roger. We've had a computer malfunction. Want to clue you in on it.

02:50:39 CC Roger. Go ahead.

02:50:42 C Okay. We noticed this after the NSR burn. Every time we would go from RENDEZVOUS back to CATCH-UP, the COMP light would come on without starting and the IVIs would display. This showed we were getting some signal in that would start the computation cycle. Okay, went to RENDEZVOUS and after the total data points, we got the first solution displayed. The START COMP light then came on and it cranked up the solution for this range, and it would not give a second data point. We went over to CATCH-UP and it had the same values in CATCH-UP that we had in RENDEZVOUS and, naturally, the light was on, which shows that we are holding it in the register. It appears that after every eighth data point all we'll get is that solution and nothing more. Our Delta-Delta-R shows that we are about 2-1/2 miles high for 15 which is 12.5 and the list isn't too bad and the radar is doing beautifully. You want to relay that on to Houston?

CONFIDENTIAL

# CONFIDENTIAL

33

02:51:49 CC Roger. Will do.

02:51:55 CC Everything is looking real good here on the ground. We still read you've got solid lock.

02:52:00 C Roger. We do have solid locking. Occasionally it will break and the needles act too wild.

02:52:05 CC Roger.

02:53:21 C Hawaii, Gemini IX. We're back in Rendezvous Mode to try to stay Closed Loop. We are getting good Delta-R's out of our computation. We will let you know when we get our next solution.

02:53:32 CC Roger. Will do. And Houston says they'll talk to you about the problem over the States.

02:53:36 C Roger. It's just the same as if we START COMP every time we turn to the Catch-up and Rendezvous Modes.

02:53:42 CC Roger. Understand.

02:53:50 CC Gemini IX, Hawaii. Houston says they confirm the Delta-H.

02:53:55 C Roger.

02:54:56 CC Gemini IX, Hawaii.

02:54:57 C Hawaii. Go.

02:54:59 CC The ATDA has been configured for Rendezvous and all lights are ON at this time.

02:55:03 C Roger. Real fine.

02:55:17 P Hawaii, this is Gemini IX. We're presently 8 degrees and 76.67 miles; Range-Rate, 126.

02:55:24 CC Roger. Copy.

02:56:17 C Hawaii. Gemini IX is 8.6 degrees; 74.58 miles; 125, Range-Rate.

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## HOUSTON

02:59:52 C Hello, Hawaii. Gemini IX.

03:00:01 CC Hello, Gemini IX. Houston here.

03:00:03 C Roger. Houston, Gemini IX. We've just gone through another cycle on the computer in the Rendezvous Mode. It brings up the first solution and then immediately goes down to give us the same as if we had pushed START COMP, Neil.

03:00:15 CC Roger. And understand it does that at the eighth data point. Is that correct?

03:00:18 C Yes. We're coming up to 9 degrees and going down to Aline the Platform.

03:00:22 CC Roger. Understand you are going to Aline now. We're going to try to work out the best time we can for you to cycle into Rendezvous Mode so that you get a correct solution at the proper time.

03:00:36 C Okay. We already thought about this one up here.

03:00:40 CC I'm sure you did.

03:02:09 C Hello, Houston. IX here.

03:02:10 CC Go ahead, IX.

03:02:13 C Okay. We just thought of another thing up here, Neil. If we get that solution right at that point, and it's bad, and we have to go to CATCH-UP to make the burns, we will have to treat the IVIs to do it.

03:02:27 CC Roger.

## GUAYMAS

03:02:52 C Our analysis on-board, Houston, is that something is initiating the START COMP cycle. We noticed

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this just as we finished the NSR burn.

03:03:04 CC Roger. We're with you. Just to advise you here, you've got less than 1 mile relative ellipticity, so it's going to be reasonably easy to predict the proper TPI.

03:03:17 C Roger. Our Delta-Delta-R shows we're in pretty good shape, too, up here.

03:03:21 CC Roger.

03:06:39 P Houston, Gemini IX. 9.6 degrees; range, 61.67; Range-Rate, 125.

03:10:20 C Hello, Houston. Gemini IX.

03:10:22 CC Go ahead.

03:10:24 C Roger. We're still Alining the Platform here, Neil.

03:10:26 CC Roger. Understand.

03:10:30 P Houston, IX. Elevation, 10.5 degrees; range, 57.55; Range-Rate, 128.

03:10:37 CC Houston. Roger.

03:11:20 C Houston, Gemini IX. Elevation, 11.1; range, 55.49.

03:11:27 CC Houston.

03:13:13 C Houston, Gemini IX. No elevation; range is 53.44; Range-Rate, 121.

03:13:20 CC Houston. Roger.

03:13:39 C Houston, this is IX. We're complete with the Platform Alinement. We're pitching up to the target.

03:13:50 CC IX. Houston has turned TPI up when you are ready to copy.

03:13:54 C Roger. Ready to copy.



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03:13:56 CC Roger. GET B: 03:35:35; GTNSR Delta-V, 11044, 26.8; burn time, 35 seconds; Address 25, 00231; Address 26, 90134; Address 27, 90020; that's 26.7 forward, 1.3 up, 2.2 right; range, 28.4 nautical miles. Range-Rate, 115; azimuth 0.5 left; elevation, 27.4 up.

03:14:57 P Roger. Houston. GET burn is 03:35:35; GTNSR 011044; Delta-V, 26.8; Delta-T, 35 seconds; 25, 00235 - correction 00231; 26, 90134; 27, 90020; 26.7 forward, 1.3 up, 2.2 right; range, 28.4; 115 Range-Rate; azimuth, 0.5 left; elevation 27.4 up.

03:15:42 CC Houston. Roger.

03:15:52 C Houston, Gemini IX. Say again GET burn, please.

03:15:56 CC Roger. It's 03:35:35.

03:15:59 P That's 03:35:35. Thank you.

03:16:01 C And we've had another COMP cycle and it's done exactly the same as the previous cycles. As soon as the first solution was displayed it went to the total vector to RENDEZVOUS at that point.

03:16:15 CC That's correct. Understand.

03:19:28 CC Gemini IX, Houston.

03:19:32 C Houston, IX. Go.

03:19:33 CC Roger, Tom. I'm sure you've been looking at this. Our estimate for the time to switch into Rendezvous Mode is at 15.3 degrees for 3 hours, 20 minutes, 05 seconds.

03:19:49 C Roger. Checks pretty close to what we've come up with. However, we're going to have to put some addresses in the computer and check them now.

03:19:59 CC Roger. Your darkness time is - your TPI is currently 5 minutes, about 5-1/2 minutes before sunset.

CONFIDENTIAL

# CONFIDENTIAL

37

03:20:06 C 5-1/2 before sunset.

03:20:20 CC Roger. Did you switch into RENDEZVOUS now?

03:20:25 C Roger. We switched to the RENDEZVOUS.

03:20:26 CC Okay.

03:21:22 C Hello, Houston. Gemini IX.

03:21:27 CC Roger.

03:21:30 C I've got a real faint light out there by the reticles. Too early to tell.

03:21:35 CC Good show! Can you tell us what time you went into Rendezvous Mode?

03:21:37 C I've got it. I've got it in reflected sunlight now as about a 6-magnitude star.

03:21:42 CC Roger. Good.

03:21:54 C Houston, Gemini IX. The boresights between the optics and the radar look very good.

03:22:01 CC Very good. We're approaching LOS.

03:22:03 P Roger.

03:27:12 CC Gemini IX, Houston standing by.

03:27:44 CC Gemini IX, Houston standing by.

03:27:46 C Pressurized element did detect sunlight in here.

03:27:51 CC Okay. Tom, it won't hurt you to go ahead and press START COMP after you get your solution.

03:27:57 C Roger.

03:27:59 CC Recommend it.

03:28:02 P Gemini IX. Elevation, 19.4; range, 231 miles; Range-Rate, 119.

03:29:33 C Houston, Gemini IX. ...

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03:29:38 CC Houston. Could not copy.

03:29:41 C Houston, this is Gemini IX. The optical bore-sight is within a ... degree of the radar bore-sight.

03:29:47 CC Roger. Understand.

03:31:05 P Houston, Gemini IX. At 22 degrees, 32 miles.

03:31:14 CC Houston. You're a bit garbled, Gene.

03:31:19 P 7:20; 22 degrees. Okay. The time that I want, Tom, is going to be 9 minutes. Don't let me miss it.

03:31:24 C 9 minutes. Okay. It's 8:17.

03:32:10 C 8:55, 6, 7, 8, 9 minutes. Right on the dude.

03:32:19 P 26, that's Point C. There's Point C and there's our solution. 26 forward, 4 right and 9 up.

03:32:24 C Okay. And at least we finished.

03:32:29 P What is it?

03:32:31 C 26 forward, 4 right and 9 up.

03:32:39 P 26 forward - -

03:32:43 C 4 right and 9 up.

03:32:47 P - - 4 right and 9 up. They gave us 26.7 and a 1.3 up. Go - go ahead, push START COMP. That was Point C.

03:32:53 C I can't get a light.

03:32:57 P Go ahead. ... we broke ...

03:33:00 P Okay. I need a good point at 10:40, Tom.

03:33:07 C Houston, Gemini IX. We've got the solution worked out real good with Point C, but when I pushed START COMP no light comes on. We'll stand by for the light and see if we get it.

CONFIDENTIAL

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39

The Closed Loop is 26 forward, 3 right and 8 up.

03:33:24 P Okay. At 10:40 I need a big point, Tom.

03:33:26 C 10:40. Okay. I'll be right on it.

03:33:31 P Did you push START COMP?

03:33:32 C Yes. Pushing - -

03:33:36 CC Houston. Copy 26 forward, 3 right and 8 up.

03:33:39 C - - Roger.

03:33:46 C You want 10:40, right?

03:33:49 P Yes.

03:33:51 C All right.

03:33:53 P We there?

03:33:56 P Mark it right there and we're on it! Point D.

03:34:00 P 25.2, 27.96. Okay. 115, 28, 24 forward, 24 forward and - -

03:34:03 CC ...

03:34:48 P - - 0 up/down.

03:34:53 P Okay. You get 8 there and the Ground gave us 1.3 up and I get 0.

03:34:54 C Give them our backup real quick.

03:34:55 P Houston, Gemini IX. Point D is elevation 25.2, range 27.96, 115 Range-Rate. Backup solution gives 24 forward, 0 up/down.

03:35:00 CC Roger.

03:35:13 P Okay. Do you want to go to - go with the - -

03:35:17 C Let's go with yours.

03:35:18 P - - 24 forward, 0 up/down.

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03:35:25 P The Ground gets 1.3 up and Closed Loop goes 8 up.

03:35:31 C Let's take the 1 up. Okay? Let's take 27 forward. Okay?

03:35:33 P That's - that's backup?

03:35:34 C Yes. 27 forward and 1 up. Okay?

03:35:39 P Okay.

03:35:43 P Just in case you can't crank that in, there's  
- -

03:35:44 C How much right?

03:35:46 P They said 2.2.

03:35:48 C Right?

03:35:50 P Yes.

03:35:52 C START COMP. We're burning.

03:35:54 P What time is it? 12 - -

03:35:56 C 12:50. Is that on time?

03:35:57 P Exactly on time.

03:36:00 C We're burning. Gemini IX's burning.

03:36:04 P Closed Loop may be - you went 27 forward, 1 up and how many right?

03:36:10 C 2 right.

03:36:14 P 2 right. You're burning it, right?

03:36:16 C One.

03:36:39 C MARK.

03:36:43 P Okay. We'll get our clocks started at 13:30. Looks like you initiated fairly well on the angle, Tom.

CONFIDENTIAL

# CONFIDENTIAL

41

03:36:46 C Okay.

03:36:51 P Here, let me get 25, 6 and 7 in 0 if I can. That right here?

03:36:58 C No, not yet. Not yet. Don't do anything with it.

03:37:00 P Okay. You can set your clock to 1 minute.

03:37:03 C Okay. It's coming down to 1 minute.

03:37:08 C ... functions ...

03:37:10 P 27 forward, 1 up and 1 right. Affirm?

03:37:13 C Yes.

03:37:15 C 1 minute. Now if we can see in this thing we can only get 1 minute.

03:37:22 P Okay. 15 seconds. Hey! I see it.

03:37:24 C Oh yes! It's out there, man. It's really out there!

03:37:25 P Boy, I hope that's not the shroud ...

03:37:26 P Okay. Coming up on 1 minute. Ready? Start your clock.

03:37:27 P Mark it.

03:37:33 C Marked it.

03:37:43 C Did you time my burn by any chance?

03:37:55 P No, Tom, I didn't. I was starting to and we hit it so fast then.

03:38:05 P Houston, Gemini IX. Is that 29.9, 23.31 miles? Range-Rate is 142.

03:38:46 C There! It's working.

03:38:51 P What is?

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03:38:54 C Closed Loop. It snapped off.

03:38:58 P Okay. Let's go to - I want an angle and a Range-Rate of 225.

03:38:59 C It's still in my reflected sunlight.

03:39:01 P Ready.

03:39:03 P Mark it.

03:39:04 C Stand by.

03:39:05 P We've got it right on.

03:39:22 P We may have to go up on this one, Tom.

03:39:29 C This Closed Loop has been pretty good.

03:40:49 P Loop is cranking.

03:40:53 C Yes, you can see it out there. We're getting dark. It's still in reflected sunlight. It's going to disappear shortly. It's getting dim. It's getting very dim. And I have the flashing lights.

03:41:15 P You have them?

03:41:17 C Houston, Gemini IX. I've got the ACQ lights.

03:41:22 P I've got them too. I see them. Oh great, Tom! 4.9. We're going to have a little UP correction on this one, but - -

03:41:24 C All right. We're in business.

03:41:27 P And we're cranking, by the way.

03:41:31 P Let's see, 4.9 - 4.9 and 35.

03:41:36 C I don't have them.

03:41:39 P I had them though.

03:41:41 C Yes, I did earlier.

CONFIDENTIAL

03:41:42 P ...

03:41:43 C The ACQ lights have disappeared again.

03:41:47 P Three of them.

03:41:55 C Three of them, right?

03:42:00 P Three or four of them.

03:42:05 C Well, I've lost them. Still tracking the radar.

03:42:10 P 2 aft and 3 up. Okay?

03:42:14 C Yes! Now I've completely lost them, Gene.

03:42:19 P Maybe roll a little bit. They were on though, Tom, I saw them.

03:42:21 C Yes.

03:42:23 P Saw them blinking.

03:42:24 C There they are!

03:42:26 P Yes, there they are.

03:42:27 C There they are again!

03:42:28 P Okay. 7 minutes. We're going to have a slight UP correction, Tom.

03:42:30 C Good.

03:42:34 P What time do you have?

03:42:36 C Okay. 5:56.

03:42:39 P Okay. We've got another minute to go ...

03:42:41 C ... just a faint little ...

03:42:44 P 34.8 ... 34.8



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03:42:48 C Hello, RKV, Gemini IX.

03:44:20 CC Gemini IX. Houston standing by.

03:44:38 CC Gemini IX. Houston standing by.

03:44:42 P Roger. This is Gemini IX at 7 minutes, elevation, 5.69.

03:50:14 P Elevation, 54.3; range, 9.35; Range-Rate, 89 feet per second.

03:50:21 CC Roger. We're less than a minute from LOS.

03:53:34 C Okay. The burn is at 16:40 after transfer 5 degrees right in the reticle and still see the flashing light.

03:53:50 C 1 up, 1 aft, 20. Okay. 7 miles and 63.3.

03:53:53 P 19 minutes, Tom.

03:54:12 P Okay. Here's our plot coming right in here. Okay? Okay. What are we coming up on now, anything much?

03:54:24 C 17:40.

03:54:25 P Okay.

03:54:29 P Boy, I feel bent over like a pretzel!

03:54:34 C There are no stars out there either.

03:54:38 P No, that moon is just blinding. You don't have any of them (stars) period!

03:54:41 P Sure glad there are flashing lights.

03:54:43 C I've got some running lights on him.

03:54:47 P I've lost him entirely now.

03:54:53 C What's that?

CONFIDENTIAL

03:54:55 P Hey, that is Scorpio. The head of Scorpio behind the moon.

03:54:59 C Yes.

03:55:02 P And Antares.

03:55:05 P I've never seen anything so bright as that moon.

03:55:07 C Yes, it's blinding me.

03:55:13 P I don't have him at all now.

03:55:16 C I don't either. I'm tracking him on radar. The needles are - -

03:55:19 P Okay. 19 minutes. Radar looks pretty good.

03:55:24 C - - Sure does. Lots better than what we've been getting.

03:55:34 P What did we do with the ... by the way?

03:55:36 C I've got it.

03:55:37 P Okay.

03:55:38 P Okay. Ready?

03:55:40 P Mark it.

03:55:42 C I've got him again.

03:55:43 P How's the angle?

03:55:44 C Now. I hit it. I'm right on him.

03:55:48 P 7 seconds late, but we'll take it.

03:55:50 C 7 seconds late only.

03:55:53 P 7 seconds. 72.5, 5.13 miles, Range-Rate is 55 feet per second. Looks fairly good, Tom. Matter fact, this is looking real good. 72.5, 5.13. Coming right in here.

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03:56:38 C Good show. We have to get in there somehow, Gene.

03:56:41 P How about a planet, or can you tell it?

03:56:43 C I can't really tell it yet, little bit of bias - maybe when I rolled to the right I goofed this up, but I think the Closed Loop will probably take us back in.

03:56:46 P I didn't like the Closed Loop transfer, but the correction seemed to be all right.

03:56:53 C Yes.

03:56:55 P Look at those needles!

03:57:00 C ... I don't have any flashing lights either, Gene.

03:57:04 P Yes. Just do the best you can and I'll take a reading.

03:57:08 C Hit it.

03:57:10 P MARK.

03:57:14 C Can't tell ...

03:57:26 P 77.1 degrees, 4.40 miles and 53 feet per second.

03:57:33 C I've lost my place.

03:57:42 P Okay. I need a critical angle at 22 minutes.

03:57:53 C There he is. I can see the red light on him now. The moon is giving him reflected moonlight.

03:58:00 P Yes, reflected moonlight is right. It sure is. You can almost see him tumble.

03:58:01 C Yes.

03:58:02 P Watch the ACQ light go around now.

CONFIDENTIAL

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47

03:58:03 C Yes.

03:58:05 P Okay. At 22 minutes I need a 4:40:76.

03:58:07 C This is Gemini IX transmitting in the blind. We have him in reflected moonlight at approximately 4 miles.

03:58:17 P Am I right - I don't expect this correction to be little or nothing, Tom. Okay.

03:58:19 C Oh, look at that moonlight!

03:58:24 P Reflected moonlight! I can almost see an ACQ light, I think.

03:58:31 P Sure can. I see something red. Okay, Tom. Here we go. 19:07. That's all right, 22:07. You ready?

03:58:43 P Mark it.

03:59:00 C Who have we got this going away to.

03:59:05 P The Out-of-Plane that's looking around ...

03:59:07 C A little left.

03:59:10 P 10.8 in 83.

03:59:14 C 10.8.

03:59:19 P See, the trouble is you give me one radar angle and one visual angle and that's what hurts.

03:59:21 C Yes.

03:59:22 P This says about 3 down.

03:59:33 C Well, if we'd have applied that number we'd have really gone down.

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## CARNARVON

03:59:34 CC Gemini IX, Carnarvon CAP COM. We're standing by.

03:59:38 C Roger. Carnarvon. We've got the ATDA in reflected moonlight at about 3 1/2 miles and it looks like we've got the Out-of-Plane wired and we're coming up the pipe.

03:59:43 CC Good show!

03:59:50 P 04 on aft and 3 down, but I - I'd buy 3 down. One's a radar angle and one's a visual angle.

03:59:58 C I think our Out-of-Plane is just about 0.

04:00:00 P 83. Okay. I'm going to take an angle and give it to them right now.

04:00:02 P You on?

04:00:08 C Yes. 23, 25. Coming up with the solution.

04:00:12 P That burn is going to play heck with us.

04:00:22 P Carnarvon, we're at 88.2 degrees and 3 miles.

04:00:24 C 3 forward and 2 down.

04:00:25 CC Roger.

04:00:26 C 3 forward and 2 down?

04:00:27 P Right.

04:00:28 C Okay.

04:00:31 C MARK.

04:00:36 P You don't even need the forward. What'd you put, 2 forward or 3?

04:00:38 C 3. It's right in there, Gene. PULSE okay. Go ahead.

04:00:42 P Okay. Let's see if we can zero 25, 6 and 7.

CONFIDENTIAL

# CONFIDENTIAL

49

04:00:44 C Okay. Going to CATCH-UP.

04:00:48 P Carnarvon. We just applied the Closed-Loop solution of 3 forward and 2 down.

04:00:58 C Okay. Go ahead now that we're in CATCH-UP, Gene. Hey, the thing isn't.

04:01:04 P No it isn't.

04:01:05 C Holding steady at 45 feet per second.

04:01:17 P Okay. Looks good.

04:01:22 P Okay.

04:01:24 C Lean it forward just a bit.

04:01:27 P I can see the red ACQ lights all right. Okay, Tom, what time do you have? 25?

04:01:28 C Yes.

04:01:31 P Going to get an angle?

04:01:33 C Yes.

04:01:35 P Okay. Now get it.

04:01:43 C Got it.

04:01:46 P Oh!

04:01:48 C Carnarvon, Gemini IX. We have the red running lights at this time, 2-1/2 miles.

04:01:53 CC Roger.

04:01:57 C Oh, we're going to brake right into the moon, Gene.

04:01:59 P Yes.

04:02:05 C Carnarvon, Gemini IX. It looks like we're going to be braking directly into the moon and it should be an interesting problem.

04:02:06 CC Roger.

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04:02:12 P Gemini IX. Elevation 94.9, range 2.37 miles, 39 feet per second.

04:02:22 P Coming up right under, Tom. Here's your last point.

04:02:25 C Good show, Gene.

04:02:29 P Okay. I want to get on LOS here, Tom, at about 5 minutes after - 5 seconds after.

04:02:36 P Don't use the moon for inertial reference.

04:02:41 C (Laughter) Okay.

04:02:43 P Okay. You ready?

04:02:44 P Mark it.

04:02:51 C Go, Gene.

04:02:58 P Too fast. Way too fast, Tom. 2 miles.

04:03:02 P Carnarvon, Gemini IX. Elevation 99.0 degrees, 2 miles, 37 feet per second.

04:03:10 P Okay, Tom. Let me take another one on this, but that was 4 - no, that's about right, I'm sorry, that's exactly right. 4.1 degrees in a minute. Let's try it again.

04:03:20 C I'm right on it. Now you can see it tumble.

04:03:22 P Right here. Here we go. You can see it tumble because of the ACQ light.

04:03:23 C The two red ones.

04:03:24 P Okay. At 5 seconds aft, I want to see 103 degrees.

04:03:27 C Okay. Are you ready?

04:03:28 P Mark it.

04:03:32 C Got it. I might have been off a tenth.

04:03:53 P 1.67 miles.

CONFIDENTIAL

# CONFIDENTIAL

51

04:04:02 P This is Gemini IX. Elevation 102.7, 1.67 miles, and 34 feet per second and we can actually determine that it is tumbling because of the ACQ light and the running light variations.

04:04:21 CC Roger.

04:04:23 P Okay, Tom. Let's see if we can get another one here at - I want to see about 106.7 to 107. You ready?

04:04:29 C Yes.

04:04:30 P There goes your radar. Okay?

04:04:31 C It's coming in and out.

04:04:32 P Stand by.

04:04:33 P Mark it.

04:04:37 P That's all right. 106.8, Tom. We're null inertially.

04:04:40 C Good show, Gene.

04:04:41 P Gemini IX is 106.8 degrees, 1.32 miles and 34 feet per second.

04:05:01 P Okay, again. I'll take it, Tom, at - Boy, no stars!

04:05:03 C No stars at all!

04:05:36 P Okay. Let's try and get this one.

04:05:38 C I've got one, but - -

04:05:40 P Get inertial.

04:05:42 CC Gemini IX, Carnarvon. We're 30 seconds to LOS.

04:05:43 C Roger. And we've got it wired inertial.

04:05:47 C This is Gemini IX at 1 mile. We can determine distance between the running lights.

04:05:50 CC Roger.

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04:05:55 P Point 98.

04:04:59 C Should we burn to brake it down some?

04:06:00 P Yes, let's go to push START COMP.

04:06:02 C I've got a START COMP. Brake her down.

04:06:04 P 32 feet per second, Tom. You might just as well take it down to 20.

04:06:10 C Okay. Stand by. RATE COMMAND to burn.

04:06:14 P Houston. Gemini IX at 110.1 degrees; 1 mile; 32 feet per second, and we're braking off to 20 feet per second at this time.

04:06:29 C Okay. There's 11-back to PULSE.

04:06:48 P Okay. Let's get some LOS, Tom, anytime you can again.

04:06:49 C Okay.

04:06:52 P Now you have a little star out there on that rascal. Look at him.

04:06:54 C Got a little star for you.

04:06:56 P Okay. If you've got a little star, I'll give you the ranges here.

04:06:59 P Inertially we look pretty good but is anything, maybe we were just - -

04:07:02 C I can see the red and green lights now on the ATDA.

04:07:04 P - - just a little and we want to keep going down.

04:07:05 C Going down.

04:07:07 P Go down; I agree.

04:07:10 P Go down for 5 seconds.

04:07:13 P Stand by. Okay. You got that star behind him?

CONFIDENTIAL

# CONFIDENTIAL

53

04:07:19 C Yes. I have just one little star.

04:07:21 P .64 miles. And you've got about - you should have about 20 feet per second.

04:07:26 C I'll look at that.

04:07:27 P There's 19 feet per second, Tom.

04:07:28 C That's good, Gene.

04:07:29 C Okay. Now ... you back, push START COMP.

04:07:30 C MARK.

04:07:31 C Go.

04:07:32 P Okay. You're coming in on half a mile with 19 feet per second. You're still going down a little. Still going down a little. Out-of-Plane looks good.

04:07:44 C Maybe a little more to the left.

04:07:46 P A little left, maybe. Coming up on a half mile. Just hold your 19 feet per second, Tom. Down and left a little. See, we're following that moon all the way up. That's why it's so bright. Okay. You're at a half mile right now at 19 feet per second.

04:08:04 C Up or down ...

04:08:07 P You're at 22 feet per second. Look, it's still going down a bit, Tom. It's not tumbling much now. Okay, there's - coming up on 2600 feet. There's 2400 feet and 22 feet per second. 2200 feet and 22 feet per second. Tom, you might want to take off - -

04:08:38 C Let's take off some more.

04:08:40 P - - Okay. Push -

04:08:41 P Okay. You're good. Press START COMP.

04:08:42 P You're coming in at 1800 feet, 22 feet per second. Are you in RATE COMMAND? Okay. 1800 feet. She's

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still going down, Tom. I think you have it now.  
Inside 1800 feet.

04:09:05 C What have we got?

04:09:06 P You've got about 13 - you have 12 feet per second. You've got 11 feet per second and you're at 1500, 1400 feet. Okay. You only have 7 feet per second now, Tom, so hold it. You've only got 7 feet per second. And you're at 12 - 1300 feet.

04:09:28 C Man, it looks like a Christmas tree out there.

04:09:33 P You only have 7 feet per second and you're at - computer's working okay. You're about 1000 feet right now. I wonder if I should try to get any pictures of this.

04:09:44 C Yes. Go ahead and try one final sequence.

04:09:50 P You're at 1200 feet ...

04:10:03 C I think we have the In-Plane, Out-of-Plane wired.

04:10:04 P Okay. You're at 7 feet per second ...

04:10:07 C ...

04:10:09 C Oh, there he is! The whole thing! The whole moose! Look at that, man!

04:10:10 P He's not moving either.

04:10:11 C He isn't moving at all.

04:10:12 P Okay. Tom, you're at 7 feet per second and you're at ... a thousand feet.

04:10:19 C Well, maybe I'll knock it down a little more.

04:10:21 P 7 feet per second right now. You're at 900 feet.

04:10:25 C I've got 5 feet per second on the gage.

04:10:27 P Okay.

04:10:29 P Coming in at 800 feet. Still at 900 feet right now.

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04:10:34 C That's a weird looking machine, isn't it?

04:10:36 P Doesn't look like it's tumbling. It may be rolling, but - it sure is.

04:10:42 C Would you believe that there's a nose cone on that rascal?

04:10:44 P I don't know.

04:10:53 P I don't know, Tom. The back of the TDA is painted; there can't be a nose cone on it, can there?

04:10:57 C I can't tell.

04:10:59 P Okay. Come on baby, you're 5 feet per second and you're at 780 feet. Want me to turn the ACQ lights off? Any time you do, let me know.

04:11:09 C No, no, let's leave them on.

04:11:14 C We still have 60 percent fuel remaining.

04:11:16 P Okay. Tom, you're at 660 feet.

04:11:21 C Roger. 660 feet.

04:11:24 P We're right In-Plane at 2 feet per second on this thing.

04:11:27 C I've got about 5.

04:11:28 P Okay.

04:11:34 P Okay. Your angle is about 130 degrees now, so it's looking good. You're at 600 feet right now. 540 feet. Boy, it's going to be nice to see that in daylight - we're looking at the TDA!

04:11:49 C Hey, we've got it!

05:11:50 P We're looking at the TDA! Sec, - -

04:11:52 C Look at that moose!

04:11:54 P ... in it.

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04:11:55 C Look at that moose!

04:11:56 C I'm going to knock it down some - -

04:11:57 P It's upside down, but we're looking at it!

04:12:01 P Back up a few seconds; tape recorder just went out.

04:12:04 P Half a "Sec". Will the lights stay on?

04:12:08 P Boy, I wish we had a - this was daylight, we could see this thing better, Tom. You're coming in on it. What's your Range-Rate? You're at 360 feet.

04:12:16 C Okay. I'll brake it down.

04:12:19 P 360 feet right now.

04:12:22 C Think I've got to stop ...

04:12:25 P Can't see which way I'm looking.

04:12:27 P We're looking at the bottom because it's not tumbling very fast.

04:12:35 C I can't really tell.

04:12:37 P You're at 300 feet.

04:12:40 C The shroud is half open. The shroud is half open on that thing!

04:12:43 P Is it?

04:12:44 C It's half open!

04:12:46 P It sure is!

04:12:49 C The back pin didn't fire.

04:12:51 P It's there but it's half open all right - -

CONFIDENTIAL

# CONFIDENTIAL

57

04:12:52 C - - It didn't fire.

04:12:54 P It's like a clamshell. It's like a clamshell, Tom.

04:13:01 P Okay. You're 240 feet. Like a clamshell.

04:13:04 C Turn on the Dock light. Let's give it a try.

04:13:09 P There's the shroud looking right at us.

04:13:11 C Hello, Houston. Gemini IX.

04:13:16 P Half open. It's half off too, Tom, because the aft lights are visible - well, they didn't come out, but they are both working. Half open, Tom. Look at that thing! You could almost knock it off! I feel certain you could. The band didn't break, I don't think.

04:13:37 C What's the range?

04:13:38 P Okay. Range is 120 feet right now.

04:13:42 C Looks like those have extended.

04:13:44 P Look at that thing! Darn it! What a mess! What's hanging from it, too. Okay. It's rolling our way, Tom; there's the dipole extended.

## HAWAII

04:25:18 C Hello, Houston. Gemini IX.

04:25:20 CC Gemini IX, Hawaii.

04:25:21 C How are you? I've got a weird looking machine here.

04:25:25 CC What does it look like?

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04:25:26 C Okay. Both the clamshells of the nose cones are still on, but they are open wide. The front release has let go, the back closing bolts attached to the ATDA have both fired and it appears that one of the bolts from the band has fired. What's keeping it together is the slip disconnect for a small electrical connector that fires the bolt on the band.

04:25:54 CC Roger. Understand.

04:25:55 C So the jaws are like an alligator jaw that's open at 25 to 30 degrees. Both the piston springs look like they are fully extended.

04:26:06 CC Roger.

04:26:11 C Both of the back parts of the nose cone have separated from the ATDA and it looks like it's just held on by some inconceivable force there. Everything looks good.

04:26:26 CC Roger. Understand. What types of rates have you got? How bad is it tumbling?

04:26:33 C Okay. It's about 3 to 4 degrees per second.

04:27:37 C 58 percent fuel remaining. We're stationkeeping to keep it out here between 10 and 30 feet from it.

04:27:38 CC Roger. Copy.

04:27:51 C All the ...

04:27:54 C ... here.

04:27:58 CC Say again, Gemini IX.

04:27:59 C Roger. It appears that the basic rate is in roll. The body axis right now is merely horizontal. Very slight bit of yaw technically inconceivable and the big rates are in roll.

04:28:11 CC Roger. Understand. Do you think there's any possibility of breaking the cone or shaking it loose by going through a few Unrigidizing-to-Rigidizing Sequences?

CONFIDENTIAL

# CONFIDENTIAL

59

04:28:21 C Well, I might give it a try.

04:28:25 CC Roger.

04:28:38 C Again, did you copy the information that it appears that the back explosive bolts connected to the ATDA have fired? Also, it is very evident that one of the strap bolts has fired, but also there is a small quick-disconnect from the pyros that fired the bolts from the strap. Those are still attached.

04:28:56 C And the ATDA is basically open. So the cone is open 3 to 4 inches at the back on both sides. It's gone out in a 30-degree angle and the strap is around it.

04:29:09 CC Roger. Understand. Are you in such a position where you could watch the Unrigidizing-to Rigidizing?

04:29:15 C Stand by one.

04:29:47 CC Gemini IX, Hawaii.

04:29:48 C Hawaii, Gemini IX. I can also see the back two springs, the back small spring, the little 30-pound springs. We're up to about 5 to 10 feet and jockeying it into position here. And the back bolt is definitely fired. I can see the spring. It's got the two shells apart about 2 inches. The two halves are 2 inches - you can see that the ... and the pyros - the cables on the pyros - the front clamshell against the strap has fired. You can see the black smudge marks on it. I'm now about 3 feet from it and those electrical connectors - the quick-disconnect did not connect on either one of them.

04:30:40 CC They did not disconnect? Is that right?

04:30:42 C - - the band is holding the whole mass together. Stand by one and let me give you a distance on this other one.

04:30:55 C Yes, I'm trying to find the cable disconnect. I can't see the cable disconnect. Of course, it would be taut. Okay, the other one. The spring is gone from the back of the other half one and -

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no, pardon me, it's still there. It's separated from - the back is completely separated 3 to 4 inches and I'll give you another good check. Oh, wait. What's holding the whole mass on there is the band. And half the time these pyro disconnects will work.

04:31:24 CC Roger. Understand.

04:31:26 CC We've got about 3 minutes here until our LOS. We'd like to go through one Rigidizing and Unrigidizing Sequence and have you watch it, if you'll get into position where you could watch it for them.

04:31:35 C Stand by one. I don't want to be too close when those things cut loose.

04:31:40 CC Roger. Understand.

04:31:41 C Okay. Now on the other side, both explosive bolts on the band have fired; the band is held intact by all four of those electrical pyros that fired the bolts. Looks like somebody did not hook up a disconnect cable.

04:31:54 CC Roger. Understand.

04:31:56 C The disconnects did not disconnect. That's the only thing that's holding the whole mass intact.

04:32:01 CC Roger.

04:32:04 C Don't Unrigidize here. Could we hack it over the States?

04:32:07 CC Roger. I was just going to suggest it. I'm getting too close to LOS.

04:32:10 C Yes, and I'm too close to the nose cone, too.

04:32:12 CC Roger.

04:32:18 C Pass that word on to Houston that all four explosive bolts have fired and it is basically free from the ATDA but just barely held on by those four little pyro wires there.

CONFIDENTIAL

# CONFIDENTIAL

61

04:32:28 CC Roger.

04:32:29 C Those little wires on the strap of the disconnecter.

04:32:34 CC Roger. Understand.

04:32:35 C And we have 58 percent OAMS fuel remaining.

04:32:37 CC Roger.

04:32:42 C It looks like an angry alligator out here rotating around.

04:32:46 CC I can imagine.

04:32:57 C Pass the word on to Houston we can stationkeep here quite awhile, and also have a suggestion that we might put out our docking bar and go tap it.

04:33:01 CC Roger. Stand by.

04:33:03 C Roger.

04:33:18 CC Gemini IX, Hawaii.

04:33:20 C Go, Hawaii.

04:33:22 CC Houston wants to wait and take a look at it and start cycling the Adapter over the States.

04:33:27 C We'll get back in the same position. Again pass on to them that all four explosive bolts have fired and it's basically the three of the ... resting on it. ATDA adapter - four little pyro wires on the adapter that are holding the whole thing.

04:33:42 CC Okay. We're having LOS.

04:33:44 C The springs have just about extended full force.

TEXAS

04:35:53 CC Gemini IX, Houston.

04:35:55 C Hello, Houston. Gemini IX.

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04:35:57 CC Reading you loud and clear.

04:35:59 C Roger. I'm out here about 20 feet from it and I guess you got the word that all four explosive bolts did fire. The back separation devices have separated from the ATDA, just hanging loosely on it. It's the four small pyro wires that go to the strap bolts that are holding it together. The two - the strap bolts have fired.

04:36:21 CC Roger. Understand, and the wire bundle disconnects - can you see anything about those?

04:36:32 C No. They're buried in there too much, Neil. I can't see it.

04:36:36 CC Roger. Understand.

04:36:37 C The clamshells at the adapter are between 4 to 5 inches apart. Those little coil springs, one of them is kind of deployed; the other one is still attached. The basic nose cone has detached from the ATDA ring. The only thing holding it together are those four wires that go - that went to the initiation on the explosive bolts of the strap.

04:36:57 CC Understand. Can you - you cannot tell whether the disconnects have pulled? Is that correct? The wire bundle disconnects?

04:37:08 C That's affirmative. What's holding it together are the four small plugs that should have quick-disconnects on the pyros on the strap. The whole thing is just loosely hanging on there. We're standing by for an Unrigidized Sequencing. If you can give it right now, it would be great.

04:37:26 CC Roger. We'll have to wait until we get over Texas.

04:37:30 C Okay.

04:37:33 CC Oh, wait a minute! It will be about 6 minutes from now when we're over - when we get in Canaveral acquisition.

04:37:40 C Okay. We're standing by to get movies when you Unrigidize.

CONFIDENTIAL

# CONFIDENTIAL

63

04:37:49 CC Okay. I've got a maneuver message for you for a Radial Sep when you're ready to copy.

04:37:54 C Roger. Radial Sep. Do you want us to stand by here and talk this thing over for a minute and see if we can't possibly - I'd like to look at the idea of possibly extending the docking bar and going up and tapping it and maybe the whole thing may fall apart.

04:38:10 CC Okay. We've got about 23 minutes left to Radial Sep. I'd like to give you that dope first.

04:38:20 P Go. Go ahead, Neil.

04:38:22 CC Okay. GET B is 04:01:00: Delta-V, 20.0; burn time, 35 seconds; pitch it 90 down; Address 25, zeros; Address 26, 90200; 27, zero; forward thrusters; Up Maneuver.

04:38:55 P This is Gemini IX. Say Delta-V - and Address is 25, 6 and 7 again, please.

04:39:03 CC Roger. 25 is all zeros; 26, 90200; and 27, zero. That Delta-V is 20 feet per second.

04:39:18 P Roger. We got it. GET B is 05:01:00: Delta-V, 20; 25-second burn time; 25, all zeros; 26 is 90200; 27 is zero and forward thrusters, Up.

04:39:34 CC Roger. ... that perhaps the cables hadn't pulled the disconnects to the wire bundles, in which case we would definitely have to wait until - with the Contingency Plan B - wait until later to look at that. We will go ahead and exercise that ATDA as soon as we get acquisition at the Cape. Your Platform Alinement prior to this SEP will be here about 5 minutes from now, so you've got that much time to see what you like.

04:40:07 C Okay. Okay, Neil. From here it looks like it's possible that the wire bundles could have separated but it's real hard to see. Again, has everybody squared away what's holding the thing together?

04:40:24 CC Well, I think everybody down here is pretty well convinced by your description of the situation.

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04:40:31 C Okay. I can't really tell whether - whether this - we have two big umbilicals that go to the ATDA. I can't tell whether those are still attached or not, but it's the four little wires that go into each end of the explosive bolts on the strap that's supposed to have a disconnect on it, and those are all intact. All four explosive bolts are fired so it's just the little disconnect umbilicals on the strap that have not pulled. All four of them are still intact. And all four should have pulled.

04:41:02 CC Roger. We're with you, Tom.

04:41:39 P Houston, Gemini IX.

04:41:41 CC Go ahead.

04:41:43 CC This is Houston. Go ahead.

04:41:45 P Roger. On the Rendezvous - we initiated with 27 forward, 1 up - which was not quite Closed-Loop. The computer then, however, did function properly to give us our proper corrections and it appears that it is working all right on all modes at the present time.

04:42:08 CC All right. Houston copied.

04:42:15 CC Did you send the L-Band Command, Gene?

04:42:40 CC Gemini IX, Houston.

04:42:44 P Go ahead, Houston.

04:42:46 CC Did you send that L-Band Command?

04:42:49 P We did send an L-Band Command. The ACQ lights are off.

04:42:52 CC Roger. Understand. And can you tell us the status of your START COMP light when you're in CATCH-UP?

04:43:07 P START COMP light is working fine. Everything appears to be normal.

04:43:16 P It was just a little anxious to Rendezvous, I guess. After we once accepted its solution, things went real well.

CONFIDENTIAL

# CONFIDENTIAL

65

04:43:22 CC Okay.

04:43:25 C And we still have about 57 percent fuel.

04:43:28 CC Good.

04:43:40 C We'll stay here and get in a good position anytime that - -

04:43:45 CC Okay. And then - how long will it take you to get in a position for Platform Aline as soon as this is over?

04:43:51 C Not too long.

04:43:54 CC Okay. We're going to be running out of - of alinement time here.

04:44:12 CC Your ... will probably be in about 5 minutes or so, so we'll have probably a little shorter alinement time. We'll be okay.

04:44:22 C Okay. I'm getting into position now.

04:44:24 CC Roger.

04:44:37 C Neil, have you gotten any reading on my suggestion about extending the docking bar and giving it a tap?

04:44:43 CC Well, we're pretty convinced, due to telemetry signals from the cables, that they are still plugged in.

04:44:51 C Okay. Well, it's barely - it looks like it's barely - that's right, the big cables may still be there, but once that strap goes, the whole thing should deploy.

04:45:03 CC Right. Are you ready to watch for - we're ready to send the commands now.

04:45:07 C Okay. Stand by.

04:45:09 CC Let us know as soon as you're ready.

04:45:10 C Okay.

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## CONFIDENTIAL

04:45:21 C Okay. We're right behind it, Neil. Send the command.

04:45:24 CC Roger.

04:45:47 CC Okay. Rigidizing now.

04:45:50 C It's moving - it's moving all around.

04:45:55 P When you Rigidized the clamshell, the alligator jaws came closed slightly.

04:45:59 CC Roger.

04:46:32 CC Okay. Unrigidizing.

04:46:34 C The whole mass rotates about 15 degrees on it.

04:46:36 CC Okay. That's a pretty good signal then. We'll plan to go ahead with Separation Burn at this point.

04:46:42 C Okay, Neil.

04:46:44 C I'm in position to start the Aline.

04:47:04 CC Okay. You've got about 14 minutes until Separation Burn so - guide your Platform Aline in positioning accordingly.

04:47:11 C Roger.

04:50:03 CC Gemini IX, Houston. We're going to be evaluating the shroud situation during the EVA preparation period. How does it look as far as being able to make that Separation time?

04:50:13 C We're working on it. I think we'll hack it, Neil.

04:50:16 CC Okay. Let us know.

04:50:37 C Houston, Gemini IX. We've finished Alining the Platform and we're moving around in position.

04:52:21 C Hello, Houston. Gemini IX.

04:52:23 CC Houston here.

CONFIDENTIAL

# CONFIDENTIAL

67

04:52:25 C Roger. We're now directly above the ATDA and I'm getting into position for the burn.

04:52:34 CC Okay. How did you think your Alinement went?

04:52:37 C The needles came out pretty smooth.

04:52:40 CC Okay.

## ROSE KNOT VICTOR

05:00:15 CC Gemini IX, RKV CAP COM. We're standing by for your maneuver in approximately 1 minute.

05:00:22 C Roger. We're in position.

05:00:24 CC Roger.

05:00:40 P RKV, Gemini IX. Stand by for a Mark. Commence with the burn.

05:00:45 CC Roger.

05:01:00 P MARK. The burn.

05:01:01 CC Roger.

05:01:07 CC You're right on.

05:01:37 CC End the burn.

05:01:45 CC Gemini IX, RKV.

05:01:47 C Stand by.

05:02:10 C RKV. Let's make sure we don't have flashing lights now and the L-Band on.

05:02:15 CC Say again.

05:02:23 CC Gemini IX, RKV. Would you say again, please?

05:02:25 C Would you make sure that the ACQ lights are commanded ON?

05:02:28 CC Roger. We just turned them ON.

05:02:43 P RKV, Gemini IX. All residuals are zero.

05:02:47 CC Roger. Very good.

05:02:49 C And the fuel remaining is 50 percent.

05:02:52 CC Roger.

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## CONFIDENTIAL

05:02:56 CC This is the Cape. Could you give us an evaluation of the range in which you can see the ACQ lights when you were making initial Rendezvous, and also how effective you thought the ACQ lights were?

05:03:09 C Roger. We saw them for the first time right after docking for quite a time. Then we lost them in the sunlight. It was for about 30 miles. It might have been closer. As soon as we went in the darkness we saw them and then we lost them occasionally.

05:03:27 CC Okay.

05:03:29 C And we saw the cabin-reflected burn light at about 5 or 6 miles, and we saw the RED running light at a good 4 to 5 miles.

05:03:39 CC Roger.

05:05:08 C RKV, Gemini IX. I now have the ACQ lights on the Gemini to outline the history of duration of roll.

05:05:15 CC Roger. Very good.

05:05:17 C Distance is now about 1 mile.

05:05:21 CC Roger.

05:05:38 CC Gemini IX, RKV. We'll have LOS in about a minute here.

05:05:43 C Roger. RKV.

## TANANARIVE

05:20:21 C Houston, Gemini IX.

05:20:26 C Hello, Canary. Gemini IX.

05:20:31 CC Gemini IX. Houston is standing by for Tananarive.

05:20:35 C Roger, Houston. Gemini IX. We're now about 5 miles from Separation and the RED running light comes in very distinguished to give us the ground

CONFIDENTIAL

# CONFIDENTIAL

69

down below.

05:20:50 CC Roger. Understand.

05:21:12 CC Gene, the Comm Tech says they were waving and smiling the first pass over.

05:21:16 C Okay, Flight.

05:26:50 CC Gemini IX, Houston's about 1 minute from LOS.

05:27:00 C Roger, Gemini IX. Our objective looks nominal on the data plot.

05:27:09 CC Very good.

05:30:12 C ... equal period.

05:30:14 C RENDEZVOUS now. We can see the RED running lights on the ATDA at 9 miles.

05:30:21 P 8.55 here, too.

05:30:23 C I'd better go up on the line, hadn't I?

05:30:26 P No not yet. That's what you're suppose to do.

05:30:29 P Oh yes, yes. Wait a minute.

05:30:33 C What's up?

05:30:35 C 30 minutes.

05:30:40 P It's 0,0,0 degrees - yes, 30 minutes.

05:30:45 C ... the line.

05:30:50 P You can go up on the line right now.

05:30:55 P Boy. That's visual crossing at 30 minutes, as far as I'm concerned.

05:30:57 C Look at that. It just - you could see it cross the horizon. It's just kind of like a gray bulk. See the night airglow?

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05:31:43 C You want the last one, Gene? You've been working hard.

05:31:47 P They're not that good anymore.

05:31:49 C (Laughter)

05:34:09 C Did you see the monster?

05:34:11 P Not yet.

05:35:02 C How we doing?

05:35:07 P I don't know. We'll have to cross ... reticle in about 45 minutes. We've got to mark, it, don't forget.

05:35:16 C I'm just trying to get that 12-degree mark.

05:35:59 P The yaw is still stuck.

05:36:02 C Okay. Just a minute here.

05:36:06 C Well, just a minute, Gene.

05:36:08 C Okay. ... left for you.

05:36:14 C Do you have that flashing duck out there? I don't have him at all.

05:36:16 P Yes, that's enough.

05:36:20 C Let me know in a little bit so I can come back and Aline this Platform.

05:36:35 P It will be about three or four more minutes. I want to get the 6 and the 12-degree marking and then we want to get their horizons about - that's at 41, and the horizon crosses about 45 on your reticle - zero on your reticle. You've got thunder down there and lightning.

05:36:50 C Yes.

05:37:02 C The flashing lights just went off.

05:37:19 P I wish the flashing light would roll around.

CONFIDENTIAL

# CONFIDENTIAL

71

05:37:35 P There it is.

05:37:40 C Got it?

05:38:28 C How are you doing?

05:38:31 P Just waiting for 12 degrees to come up.

05:38:33 P You probably could - might just as well go ahead and Aline, Tom.

05:38:36 C Can you see it?

05:38:38 P Yes, I can see it. I don't know - it's pretty tough to see it while you're alining though.

05:38:44 P But we're aways yet from it, coming up in about 3 or 4 minutes though.

05:39:14 P Just like the simulator? Right?

05:39:20 P Oh, I just saw a falling - a star.

05:39:21 C Did you?

05:39:22 P Yes.

05:39:26 C One never knows when you might see a falling star.

05:39:27 P We on?

## COASTAL SENTRY QUEBEC

05:44:41 CC Gemini IX, CSQ CAP COM.

05:44:44 C CSQ, Gemini IX.

05:44:46 CC Roger, Gemini IX. You can start your fuel cell purge at your convenience and advise the next ground station of your results. It does not have to occur over a ground station. Recopy.

05:45:00 C Roger, CSQ, on the fuel cell purge. We're just about to the Horizontal-Adjust Maneuver.

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05:45:05 CC Roger. Understand, and we're standing by.

05:47:56 C CSQ, Gemini IX.

05:47:58 CC Gemini IX, CSQ CAP COM. GO.

05:48:01 C Roger. We have passed the Horizontal-Adjust Maneuver. We are exactly nominal and our corrections are zero.

05:48:09 CC Roger.

## HAWAII

06:00:24 C Hello, Hawaii. Gemini IX.

06:00:27 CC Gemini IX, Hawaii.

06:00:28 C Roger. We're still Alined in our Platform. We're standing by to roll inverted in approximately 15 minutes.

06:00:37 CC Roger. We'll be getting a tape dump from you this pass.

06:00:41 C Say it again.

06:00:42 CC We'll be getting a tape dump from you this pass.

06:00:44 C Okay.

06:00:46 C This one's off the ATDA, isn't it?

06:00:50 CC We haven't got any more words on it.

06:00:53 C Okay. Well, first we suggest that we give it one more try to bump it with our docking bar and see if we can't break it loose.

06:01:02 CC Houston has your input.

06:01:04 P Okay.

06:05:45 C Recording at 1 hour and 4 minutes after separation.

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06:05:49 P Looking at the target in reflected sunlight. Getting ready for TPI. Setting in 47 degrees on the sextant. The target is in the background of lighted earth and arising clouds and it's almost impossible to keep track of the target. Waiting for the 47 degrees to come up, and the target and horizon are superimposed. You almost have to keep the target in the sky, keep the horizon just above it, and keep inkling up to the angle, but then you have no reading of the angle unless you take the sextant from your eye and actually read it. It's almost impossible to keep track of the target in the background.

06:06:30 CC Gemini IX, Hawaii. If you can, I'd like an on-board OAMS Prop Quantity, please.

06:06:33 P Roger. Now reading 49 percent.

06:06:35 CC Roger.

06:06:47 P Tom, I may let you write down some numbers.

06:06:50 C Okay. Any time.

06:06:52 P Will you be able to?

06:06:54 C Sure.

06:06:57 P Okay. When I get this sextant, I'm going to - I'm going to - -

06:07:02 C Got to be in boresight - -

06:07:03 P - - also get - you'll have to boresight - I'll get 96, 36 and 35. You can write those down.

06:07:11 C Okay. 96 ...

06:07:44 P Boy, it's almost impossible to get these, these angles where the horizon - when you've got to get down in the bottom of the Spacecraft, Tom.

06:07:50 C Is that right?

06:07:52 P Oh, boy! You see the horizon's almost out of view.

## CONFIDENTIAL

And I keep floating up to the top of the Spacecraft, I can't stay down here. I've got to stay very low and very close.

06:08:18 P Nominally, this 96 should be what? We'll tell how close we are. Here it is right here.

06:08:26 C 96 should be 31 degrees.

06:08:35 C 26 - 3.

06:08:42 P You see the problem here is I cannot - -

06:08:45 C You got ...

06:08:47 C Give me a quick 30-second fix.

06:08:49 CC Gemini IX, Hawaii. We have 30 seconds to LOS.

06:08:52 C ...

06:08:54 P Is that right - that ...

06:08:56 C 6.32.

06:08:59 C You've got 27 degrees, no wonder your Beta isn't ...

06:09:01 P Well, the first one we want is - 30.

06:09:03 C 30 what?

06:09:06 P I can't stay down and forward in the Spacecraft and you also can't set in 47 degrees in here very long.

06:09:38 P Coming close.

06:10:14 P Coming close, Tom.

06:10:38 P Atta boy, Tom.

06:10:39 C Okay.

06:10:40 P Yes. I want you - the main thing is when I say Mark, Mark the time.

06:10:42 C Okay.

CONFIDENTIAL

# CONFIDENTIAL

75

06:10:46 P Stand by.  
06:10:48 C Yes.  
06:10:49 P Stand by.  
06:10:56 P Mark the time.  
06:10:57 C Roger.  
06:10:58 P 9:55. Write it down.  
06:11:02 P Time?  
06:11:06 C What is it, 47?  
06:11:09 P 20.9 degrees. 5.54 miles.

## HOUSTON

06:11:13 CC Gemini IX, Houston standing by.  
06:11:14 P Okay.  
06:11:18 C Okay.  
06:11:21 C Should I write them in the right column here, or...  
06:11:23 P That's right. 5.54, 36 feet per second. The main thing is, did you get the time?  
06:11:28 C 9:55.  
06:11:29 P Okay. Fine. And, 26 feet per second on that one.  
06:11:33 P Okay. And on the next one, just write the next ones in and I'll make the calculations if I can see the horizon.  
06:11:45 P It's going to be a real touch and go one here because ...  
06:12:06 C Shouldn't 30.9 be down at the bottom? 5.45 be here?  
06:12:19 P Did I foul up on this? You still voice setting?  
06:12:23 C Yes.

# CONFIDENTIAL



## CONFIDENTIAL

06:12:25 P I fouled up, that's all right. I'll get it. I'll make it up. I fouled up. Sorry Tom, I'll get it, I'll get it.

06:12:33 P Boresight.

06:12:35 C I'm boresighted.

06:12:37 P What time is it right now?

06:12:38 C 11:35.

06:12:39 P Okay.

06:12:40 P Time?

06:13:43 CC Gemini IX, Houston standing by.

06:13:45 C Roger. We're approaching terminal phase of this ...

06:17:36 CC Gemini IX, if you have time, confirm that you have sent the L-Band Command.

06:17:44 C What? That we have sent the L-Band Command, Neil?

06:17:50 CC Roger. Confirm.

06:17:52 C Roger. Over. We have a solid lock-on here. Neil, we have been in reflected sunlight ever since we turned over upside down starting up. We just completed TPI.

06:18:04 CC Roger. We're with you.

06:18:06 C Okay. And everything's looking good.

06:19:06 CC Good. Houston. We understand that you have turned the ACQ lights OFF. Is that correct?

06:19:12 C Negative. We have not turned the ACQ lights OFF.

06:19:14 CC Okay. We're running pretty "scotch" on power on this thing, so I'd like to have you turn them off when you can.

06:19:22 P Roger. We'll turn them off right now. Neil.

CONFIDENTIAL

# CONFIDENTIAL

77

06:19:25 CC Okay.

06:19:29 P M.A.P. verified.

06:20:30 CC Okay.

06:20:41 P Houston, Gemini IX. Our pitch angle is now about 54 degrees.

06:20:46 CC Houston. Roger.

06:21:06 C Okay. One hour and 20 minutes from initiation. Pitch angle is about 56 degrees down, taking sextant sighting.

06:21:18 P Checking corrections.

06:21:30 P I'm going to get an angle to the sun's edges.

06:21:49 P Okay. We got it?

06:21:52 C Yes. She is boresighted.

06:22:11 P 27 feet per second. You've got the times? ... zero. 80 degrees, 80 degrees and about 2 minutes. ... might be able to recover, Tom.

06:22:30 P 55:22.

06:22:33 C Oh, look at that ...

06:22:35 P Right here. Caught you back on a curve.

06:22:40 C Good show!

06:22:42 P I hope we're not overshooting it.

06:22:45 P Okay, Tom. In about another minute we should be coming up about 64 degrees. I wanted to get a good sextant sighting for Chuck because he wants this badly.

06:22:59 C What do you think of the sextant there?

06:23:03 P Well, it's all right but you've got such limited space to work with. It's got limitations more at

# CONFIDENTIAL

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night than it does during the day. If I could just make sure I get the horizon on this next one. You see, I'm forced way down in the corner of this thing and I can barely see the horizon, and like this one - I don't know if we'll get this one or not, Tom.

06:23:30 P If we do, it will be by the hair of our chinny chin chin!

06:23:37 C Okay. Second correction is two seconds down. Stand by. I'll get it here.

06:27:00 C MARK.

06:27:01 P Okay. Let's go into LOS real quick.

06:27:04 C Going into LOS.

06:27:06 P Okay. And we're inside and let me get our - -

06:27:09 C We should sit here at zero, you might check that.

06:27:11 P - - .91 miles. Okay, and we've got 19 feet per second and we're ready to check LOS at any time.

06:27:21 C Okay. I'm on him.

06:27:22 P Got him.

06:27:24 P Mark it. You're on him. You're accurate enough for LOS?

06:27:28 C Yes.

06:27:29 P Okay.

06:27:30 P 67.9.

06:27:44 P Okay. You're at 0.8 of a mile and you're about 19 feet per second coming up on another LOS.

06:27:52 P Are you ready?

06:27:54 C Yes.

06:27:55 P Mark it.

CONFIDENTIAL

# CONFIDENTIAL

79

06:27:56 C Yes.

06:27:59 P 67.9. That means it's zero, Tom. On a zero, that means you want to go up. Let me just check this in 30 seconds. 67.9. That means you're here and you're at 0.7 of a mile. That means you're on and probably want to go up. Okay.

06:28:18 C On it.

06:28:19 P Stand by in 5 seconds.

06:28:23 P Mark it.

06:28:24 C Got it.

06:28:30 P Okay. Go up the angles - -

06:28:32 C Okay. How much?

06:28:33 P - - Okay. 7 seconds up.

06:28:37 C 32 to 39.

06:28:40 P Stand by.

06:28:42 P Mark it. Okay. Your range - that last lock correction was no good. Bad correction. Okay. Coming in at 1/2 mile, Tom. We've got to check LOS all the way because you have no stars.

06:28:52 C Yes. It's really starting to grow out there.

06:28:57 P Okay. You're 19 feet per second. How about LOS?

06:29:01 C Good enough. Shoot it.

06:29:03 P Okay. Right now.

06:29:07 C Another half a mile you can really see him go out there to brake it. Optically, you can easily judge the half mile.

06:29:13 P 3.9 to brake.

06:29:16 C Okay. I'd better start knocking it down before too long.

# CONFIDENTIAL

## CONFIDENTIAL

06:29:19 P Okay. You're inside a half mile. You've got about 19 feet per second, Tom, and thrust up, up, up. Keep going up and let me check range.

06:29:33 P Okay. You're inside a half a mile. Better start braking.

06:29:37 C Okay. Braking it down.

06:29:39 P You thrusted up 10 seconds, that was good. You got 19 feet per second.

06:29:42 P And - I'll probably pull off nine of it.

06:29:49 P If I keep going around that - -

06:29:52 C We're right in-plane.

06:29:53 P - - Okay. But you've still got to go up.

06:29:59 C I can see the angry claws right now.

06:30:00 P You still have to go up.

06:30:05 P Okay. You're 2,000 feet. Okay. Hold it Tom. What do you have on there? You've got about 11 feet per second.

06:30:11 C Okay.

06:30:13 P You're at 2,000 feet.

06:30:18 C Got to go up.

06:30:20 P 11 feet per second and 2,000 feet.

06:30:23 C You can really ... easy to brake.

06:30:24 P Okay.

06:30:27 C Right In-Plane.

06:30:30 P Okay, but you're 1800 feet. Keep that ball going around and you're at 7 feet per second. Real good shape: 1800 feet, 7 feet per second.

06:30:44 C Okay, I'll - -

CONFIDENTIAL

# CONFIDENTIAL

81

06:30:46 P Watch his - watch this ball now.

06:30:47 - - Optically, I can see him grow. There is no trouble about seeing him grow.

06:30:54 C I wonder if we knocked that Range-Rate down too low.

06:30:57 P 7 feet per second.

06:30:59 P Okay. Thrust up for 5 seconds, Tom.

06:31:01 C Okay. Up. I can see the shroud of the ATDA.

06:31:04 P All right.

06:31:07 P Mark it.

06:31:09 C Okay.

06:31:13 C Coming in.

06:31:17 P 1500 feet.

06:31:23 C Oh, look at it! Beautiful!

06:31:25 P 7 feet per second.

06:31:29 C You can tell you're growing. Just no trouble at all telling you're growing.

06:31:33 P That last sextant's reading was down in the bottom of the corner; it was almost impossible, and that's what happened on that one. Okay, Tom, you're at - 1400 feet. You've got a good Range-Rate, 7 feet per second. You're coming right under him. Your angle's very slowly going up - going - you could probably thrust up for another 4 seconds. Mark it. Stand by.

06:32:00 P Mark it.

06:32:01 C I don't want to use too much more fuel here.

06:32:02 P Okay.

06:32:07 P You've got 7 feet per second and you're probably

# CONFIDENTIAL

## CONFIDENTIAL

coming in at 1200 feet.

06:32:13 P Okay. You're inside of 1200 feet.

06:32:18 P Boy. I really screwed up on that one, Tom. I'm sorry.

06:32:23 P We had a good transfer through and good second correction. The third correction is what hurt us.

06:32:30 C I'd estimate we're about 1000 feet, optically.

06:32:33 P Okay. We're 1000 feet exactly.

06:32:34 C ...

06:32:35 P 960 feet.

06:32:37 C I can see it in the reticles.

06:32:38 P Okay. She's moving around the ball. You're moving in 90 degrees. You're in good shape. You've got 7 feet per second, 7 feet per second. Okay. You're at 800 feet.

06:32:59 P 780 feet, Tom, 7 feet per second.

06:33:09 C Okay. Run some off.

06:33:16 P 660 feet.

06:33:18 C Hey, you can see us growing pretty good. There, I'll knock a little bit off.

06:33:21 P 7 feet per second at 660 feet, and you're going around the ball to 90 degrees.

06:33:37 P 540 feet.

06:33:42 P You've got about 2 to 3-feet-per-second, Tom.

06:33:47 C That's just what I want.

06:33:51 C Hello, Houston. Gemini IX.

06:33:54 P Okay. You're going around to 90 degrees. In real good shape, Tom, and you've got 420 feet.

CONFIDENTIAL

# CONFIDENTIAL

83

06:34:01 C Hello Houston, Gemini IX.  
06:34:08 C Oh, look at that son-of-a-gun do it.  
06:34:10 P Okay. You're coming right up under it at 90 degrees. You've got 5-feet-per-second closing.  
06:34:18 P You're at 360 feet.  
06:34:24 C Yes. You can see just the length of it out there - outline of it.  
06:34:29 P Look at that banana claw there.

## ROSE KNOT VICTOR

06:34:36 CC Gemini IX, RKV CAP COM will be standing by until you stabilize and start stationkeeping.  
06:34:38 C Roger, RKV.  
06:34:40 P Check your Range-Rate.  
06:34:43 C RKV, Gemini IX. We're there.  
06:34:45 P 360 feet.  
06:34:47 C We broke optically and I'd estimate we're about 200 feet just slowly closing in.  
06:34:51 P 2 feet per second. You're in good shape. And, we're coming around. We'll be heads up, we'll keep coming this way, Tom.  
06:35:09 P Barely closing. Still at 360.  
06:35:10 C ...  
06:35:14 P See those claws look at you. Boy, your window is filthy. I can see from here.  
06:35:25 C Yes.  
06:35:27 P It's 300 feet, Tom.

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06:35:42 P 2-foot-per-second closing, 300 feet.

06:35:54 P 240 feet.

06:36:05 C I've got 42 percent fuel.

06:36:10 P Yes. I should have done better on that one.

06:36:14 P If I had ignored that third correction that I used with that last sextant reading, we would have - we would have probably come right on in, - and it's nighttime.

06:36:27 Hello. This is Gemini IX transmitting in the blind. How do you read?

06:36:30 CC Gemini IX, this is RKV. Reading you loud and clear.

06:36:32 C Okay. We have completed the optical rendezvous and are stationkeeping about 100 feet from the ATDA and closing in.

06:36:40 CC Roger.

06:36:45 C I have 42 percent fuel remaining.

06:36:47 CC Roger. Understand. 42 percent.

06:36:49 C Roger.

06:36:51 CC Roger. I have some information for you when you're ready to copy.

06:36:53 C Wait till we get a fuel cell purge here.

06:37:03 P Wow! That sunlight!

06:37:06 C Can you see him now?

06:37:09 P Yes. He's right in front of me. I can't tell much about him, though.

06:37:12 C Okay.

06:37:13 P We're drifting up. If you yaw to the right a little bit you'll have him.

CONFIDENTIAL

# CONFIDENTIAL

85

06:37:33 P This is Gemini IX. Go ahead with your update, RKV.

06:37:35 CC Roger. First, I have some information for you. The people at the Cape and Houston do not believe we can get the shroud separated.

06:37:47 C Okay.

06:37:48 CC - - and so we'll go on with the Sep Maneuver and want to advise you to use minimum OAMS during your stationkeeping period. If you have on-board readings of 40 percent, we'll have enough to - for the rest of the Flight Plan.

06:38:04 C Roger. We have ...

06:38:05 P ... to the right. Watch it, Tom, I can't see him, he's in the sun.

06:38:08 CC Okay. If you're ready to copy I have your Sep Maneuver.

06:38:10 C Okay. Watch it.

06:38:11 P Stand by one.

06:38:12 CC Standing by here.

06:38:18 P I can't even tell - see how close we are, Tom. Yaw to the right. I can't see it - oh, I guess we're - -

06:38:23 C I've got him. I've got him.

06:38:24 P - - I can't even - -

06:38:29 C Okay. He's coming over to your side.

06:38:30 P - - Okay.

06:38:33 C Okay. Go ahead with your message now.

06:38:34 CC Roger. This is your Sep Maneuver. GET B: 07:14:58; Delta-V, 3.7; burn time, 6 seconds; yaw 0, pitch 0; Address 25, 90037; Address 26, all zeros; Address 27, all zeros; thrusters forward; Maneuver Retrograde. Over.

# CONFIDENTIAL

## CONFIDENTIAL

06:39:13 P Remind me of the BEF, too.

06:39:16 CC Over.

06:39:17 P Roger. Understand. Stand by one.

06:39:23 C I've got him.

06:39:27 P That's a good boy, Tom.

06:39:28 P This is Gemini IX. I am in the process of purging O<sub>2</sub> on Section 2 at this time and the Sep Maneuver is GET B: 07:14:58; Delta-V, 3.7; Delta-2 is 6 seconds; yaw 0, pitch 0; 25 is 90037; 26 and 27, all zeros; forward thrusters; Retrograde.

06:39:55 CC That's of - Roger.

06:40:13 C RKV. We could turn the ACQ off - the running light off, if you want.

06:40:21 CC Roger, IX. Want to advise you to start that maneuver behind the ATDA.

06:40:27 C Roger. We are in a BEF attitude now. We will Aline BEF.

06:40:31 CC Roger.

06:42:28 CC Gemini IX, RKV. Like to have you turn the L-Band radar off and turn it on prior to the Sep Maneuver.

06:42:38 C L-Band coming off.

06:42:42 CC Reason for that is it's getting a little bit warm. We've got about 30 seconds till LOS and we'll be standing by.

06:42:47 C Roger. We're Alining Platform BEF and we'll make the Retrograde from that one.

06:42:51 CC Roger.

06:46:10 C Okay. To continue on the debriefing on the Optical Rendezvous, it was very easy to see the size of the ATDA, with the nose cone grow at 1 mile. The angle subtended in the optical reticle was very good.

CONFIDENTIAL

Suggest the most practical way of determining the pitch angle is to boresight continually and get pitch off the ball or out of the computer, instead of using the sextant for the initiation of Q. And it was very easy to ascertain when approximately 1/2 mile angle. We did not brake until we reached approximately 2000 feet, at which time we could see the angle that the ATDA subtended in the reticle.

06:47:01 C It was very easy to see the ATDA grow all the way through the complete maneuver.

## HOUSTON

06:56:02 CC Gemini IX, Houston. Standing by for your fuel cell purge report.

06:56:41 CC Gemini IX, Houston.

06:57:23 CC Gemini IX, Houston.

06:57:26 C Houston, Gemini IX.

06:57:28 CC Roger. How'd the purge go?

06:57:31 C Say again.

06:57:32 CC How'd your fuel cell purge go?

06:57:35 C Real good.

06:57:37 CC Okay. Listen, what's the maximum range you think you were able to see the ACQ lights at night?

06:57:45 C Right after TPI we saw the ACQ lights.

06:57:49 CC Roger. Right after TPI.

06:57:54 C Roger. Then they faded out as the vehicle rotated.

06:58:01 CC I understand that it faded out. What do you think the maximum range was there?

06:58:12 C ... estimate it.

## CONFIDENTIAL

06:58:22 CC Something like 25 miles, right?

06:58:35 C We'll estimate we saw it just as soon it passed ... around 25 miles.

06:58:41 CC Roger. I understand.

06:58:47 CC How's that alligator?

07:14:49 C Okay. Separation burn at 7:14:58. Standing by for 3.7-foot-per-second burn.

07:14:54 P 53, 54, 55, 56, 57, 0, burn.

07:15:03 C Counting down 3, 2, 1 -

07:15:04 C Mark it.

07:15:10 C Okay. Hit 82. I'll get the other one.

07:15:12 P Yes.

07:15:15 P I just want to see because we're looking for 37, actually ...

07:15:20 C That's good. 82 is 0, 81 - is 2/10ths of a foot per second.

07:15:30 P Okay. I can get it - -

07:15:32 C Okay. Give it a blip right.

07:15:33 P - - Okay.

07:15:37 P Oh, way too much on it.

07:15:39 C&P Zero.

07:15:40 C 80.

07:15:41 P About 2.

07:16:00 C Go ahead and pull the thing aft.

07:16:01 P Proceeding aft.

07:16:02 C Hold it. - Okay. That's recycling.

CONFIDENTIAL

# CONFIDENTIAL

89

07:16:03 C Sync.

07:16:09 P All zeros.

07:16:12 C Going to PRELAUNCH. Let's get the computer OFF, to say the least.

07:16:18 P Maneuver Controller is OFF.

07:16:20 C Roger. Mine's coming unstowed. Now -

07:16:39 C Something's wrong.

07:16:42 C Let's turn the computer OFF. Okay?

07:16:44 P We have PRELAUNCH. Let's turn it OFF. We don't need it.

07:16:49 C Will I need the Platform? Know what I mean?

07:17:35 P Where are we?

07:17:40 C Now we'll go down like this, slowly come back.

07:17:44 C Yes. I wonder where we are over the world.

07:17:49 P Yes. Feel like getting this UCD off before it explodes.

07:17:54 C Yes. Let's - go at this one at a time.

07:17:56 P Roger. One at a time.

07:17:58 C Yes.

07:17:59 P ... stand by.

COASTAL SENTRY QUEBEC

07:18:41 CC CSQ CAP COM.

07:18:43 C CSQ CAP COM.

07:18:44 C We have completed Retrograde.

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## CONFIDENTIAL

07:18:48 CC Roger.

07:18:59 C Power Control switches are ON.

07:19:01 CC They are ON. Understand.

07:19:12 C Okay. I have the ...

07:19:20 CC Your CRYO Quantity read ...

07:19:48 CC Would you place your CRYO Quantity read to FUEL CELL O<sub>2</sub>?

07:21:06 C CSQ, Gemini IX. We would like to power-down ... Platform. We have already got our computer OFF.

07:21:12 CC Roger. Stand by one.

07:21:21 CC We'd like you to change your radar ... ten minutes after your maneuver, and if you're satisfied, turn your radar off until the next ... and power-down ... before proceeding with your power-down.

07:21:51 C Roger. We've already done that.

07:21:53 CC Roger. Would you give me an OAMS Prop readout please?

07:21:56 C ...

07:22:03 CC Roger. Understand.

07:22:12 CC We have nothing further for you at this time, Gemini IX. Standing by.

07:24:26 CC Gemini IX, CSQ CAP COM.

07:24:28 C CSQ, go ahead.

07:24:30 CC We have a Flight Plan update for you.

07:24:32 C Roger. Stand by.

07:24:51 C Gemini IX, go ahead.

07:24:52 CC Roger at Hawaii. Time: 07:37:00; crew status report.

CONFIDENTIAL

# CONFIDENTIAL

91

07:25:07 CC Sleep period from 08:00:00 to 09:00:00. At CSQ: Time, 08:54:00; PLA update; fuel cell purge and CRYO Quantity readout. Sleep period from 09:00:00 to 17:00:00. Did you copy?

07:26:00 C Roger. We have a crew status report at Hawaii at 07:37:00, and a sleep period from 08:00:00 to 09:00:00, CSQ, and we'll pick you up at 08:54 to PLA update; fuel cell purge, CRYO Quantity switch readout; sleep period from 09:00:00 to 17:00:00.

07:26:30 CC That's affirmative. We have nothing further for you, Gemini IX.

07:26:34 C Roger. ...

07:26:40 CC And we're showing you GO as you go by.

07:26:44 C Roger.

## HAWAII

07:38:00 CC Gemini IX, Hawaii.

07:38:02 C Hawaii, IX here.

07:38:04 CC Roger. How's it going?

07:38:06 C Real good. We're powering-down now and we've completed the Optical Rendezvous real good - right on schedule, and there's no trouble at all braking optically and it fell in sight just like we planned it would. Right now we're powered-down and are getting squared away to start the eat period.

07:38:27 CC Roger. Understand. We expected to see a thermometer in somebody's mouth at this time.

07:38:38 C We'll give you one.

07:38:40 CC Okay. Have you got your Control Power switch OPEN on OAMS?

07:38:46 C Control Power is CLOSED. Control Power is OFF.

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07:38:50 CC Roger. Understand.

07:38:54 P If you knew what we were doing you wouldn't have expected to see that thermometer.

07:38:57 CC Roger. Understand.

07:39:28 CC Gemini IX, Hawaii.

07:39:29 C Go ahead, Hawaii.

07:39:32 CC During your power-down, did you stay in PRELAUNCH for 18 seconds before you proceeded with the powering-down?

07:39:40 C That's affirm. We stayed in PRELAUNCH, got the light, and then powered-down about 15 minutes later.

07:39:45 CC Okay. You did get the COMPUTER RUN light?

07:39:48 C That's affirm.

07:39:49 CC Okay. Have you tried switching the auxiliary receptacle yet?

07:39:53 C No. We'll troubleshoot that in a little bit here.

07:39:56 CC Okay. Very good.

07:40:03 CC Okay. We have a good reading on the Command Pilot on the oral temp.

07:40:07 C Okay. Here comes the Pilot.

07:40:41 CC Do you happen to have any food or water report to us as yet?

07:40:53 C Yes. We completed eating one meal. We're getting ready to start another one and I'll give you a hack on the water in a second.

07:41:00 CC Roger.

07:41:30 C We've had 40 ounces of water split about equally.

07:41:37 CC Roger. Understand. Could you identify that meal for us?

CONFIDENTIAL

# CONFIDENTIAL

93

07:41:52 C Roger. Meal C, Day 2. Meal C and we split it.

07:41:56 CC Roger. Thank you.

07:42:34 CC Gemini IX, Hawaii. We have a valid oral temp on both crew members.

07:42:47 C Okay.

07:42:51 CC Do you have any comments to make on the thermal condition up there? How does it feel?

07:42:56 C Roger. We were warm during both the Rendezvous and now that we've powered-down we're starting to cool off. We're still running Suit Fans 1 and 2. Neither one of us was perspiring at all, though.

07:43:07 CC Okay. Very good.

ROSE KNOT VICTOR

08:10:15 CC Gemini IX, RKV.

08:10:17 C Hello, RKV. Gemini IX here.

08:10:20 CC Roger. We're showing on the ground that you still have both A pumps on Primary and Secondary Loop. Was that to help to cool down or just what was the reason?

08:10:31 C Affirmative. We still feel warm, that's why we are on Pumps 1 and 2. We wanted to leave them on a little while till we got cool.

08:10:38 CC Roger. Very good.

08:10:41 CC Okay. There's been a slight change on this Re-Rendezvous because of the problem with ATDA ACQ lights. We're considering the Re-Rendezvous with an approach from above in daylight. What do you think about that?

08:11:01 C ...

08:11:04 CC Say again.

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08:11:06 C It doesn't make any difference. We can Rendezvous in about any type of situation you can give us.

08:11:11 CC Okay. They'd would like to try this type of an approach, daylight from above.

08:11:27 CC Okay, Gemini IX. We'd also like to get confirmation that you have the C-Band in the COMMAND position.

08:11:35 C We've got the Adapter CONTINUOUS REENTRY ... will go from ADAPTER to COMMAND.

08:11:42 CC Roger.

08:11:52 C Right now, on Gemini IX, our fuel budget looks pretty good.

08:11:58 CC Say again, please.

08:12:00 C Roger. Looks like we have enough fuel to hack it.

08:12:03 CC Okay. Roger. Very good.

08:12:48 CC Okay, Gemini IX. We just put a Tx into the Spacecraft to turn T/M off for us after our LOS.

08:13:55 C Roger. We saw the light.

08:13:57 CC Roger.

08:17:24 CC Gemini IX, RKV. We have about one minute to LOS.

08:17:29 C Roger.

## TANANARIVE

08:31:18 CC Gemini IX, Houston.

08:31:29 CC Gemini IX, Houston.

08:31:32 C Go, Houston. Gemini IX here.

08:31:34 CC Roger, Tom. I have some questions from the Cape concerning the shroud.

CONFIDENTIAL

# CONFIDENTIAL

95

08:31:41 C Go ahead. I guess we're the experts.

08:31:43 CC I'm sure you are. I understand the shroud gap at the base is about 3 to 4 inches. Is that correct?

08:31:51 C Roger. That is affirmative. It's about 3 to 4 inches wide down at the base. Both of the explosive bolts at the base of the shroud, where it attaches to the TDA, fired, and you can see the little coiled springs in between. One coil spring was attached sort of between both of them, and the other coil spring wasn't ...

08:32:16 CC Roger. Understand. Can you estimate the gap between the shroud at the strap and also at the apex? Over.

08:32:26 C Again there are the small wires hooked to a connection ... and bolts.

08:32:39 CC IX, Houston.

08:32:50 CC Gemini IX, Houston.

08:33:10 C ... maximum. When the signal was sent to Unrigidize, the control unit moved back and forth like it was real loose there. I'd say about 15 to 20 degrees.

08:33:23 CC Roger, Tom. Let me ask you some questions about it. Can you estimate the distance between the shroud at the strap, and also at the apex? Over.

08:33:32 C Say again, please.

08:33:33 CC Distance between the shroud halves at the strap and at the apex.

08:33:42 C Roger. At the strap it's kind of hard to say - we have 6 inches or more.

08:33:53 CC Yes.

08:33:55 C About 6 inches.

08:33:57 CC Okay. What about at the apex of it?

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08:34:00 C At the top of it?

08:34:02 CC Affirm.

08:34:04 C 2-1/2 feet, maybe 3 feet.

08:34:07 CC Okay. Does the strap appear to be tight, or does it appear to be loose on it?

08:34:12 C It looks like the shroud has extended out to the length of those two pyro connectors on each bolt and opened the back end about 4 inches. Open it up like a couple of jaws and you'll have the total configuration. The angle between the two halves is a good 20 degrees, maybe in excess of that.

08:34:28 CC Okay. Can you tell the length of the spring cartridges? Can you see those well enough to tell me if they look like they're fully extended?

08:34:39 C The spring cartridges just about reached their full stroke for the ones we saw at the Cape the other day.

08:34:46 CC Okay. Understand. Does it look like you can get to the lanyard on the pyro wire just inside the shroud? Over.

08:34:56 C There are four connectors there but from what I can see the biggest question in my mind is whether the lanyards were ever installed.

08:35:05 CC Okay. You think the lanyards are not even there, right?

08:35:08 C I looked - probably we flew in within a couple of feet. That's about as close as I could get in position. I'd say the closest we got was about 2 feet, and I could plainly see the insulation on the wiring. It was frayed. You could see the connectors where they hooked into the bolts and the way it was holding, but I couldn't actually see the lanyards on it.

08:35:31 CC Okay. I understand. If that thing is open far enough, do you think you could get in to pull the lanyard on the QD on the umbilical? Over.

CONFIDENTIAL

# CONFIDENTIAL

97

08:35:43 C Say again.

08:35:44 CC Do you think you could pull the lanyard on the quick disconnect inside the shroud?

08:35:53 C Well, I'll ask Gene to talk to you on that.

08:35:55 CC Understand. One last question on the shroud. Has it moved in relationship to the TDA? Has it shifted fore and aft, or has it rotated any? Over.

08:36:06 C Pitched up and down, when it Unrigidized and Rigidized - opened and closed a little bit and it rotated. The total X-Axis of the shroud pitched up and down a little bit, about 15 degrees. The jaws opened a little bit.

08:36:23 CC Understand. Did you say it did rotate also?

08:36:29 C No, not much rotation ... mostly just the total shroud ... pitched up and down about 15 degrees.

08:36:37 CC Okay. I understand. I think we've talked about that shroud long enough. You can ignore this locking on the target again at CSQ. Don't bother doing that. We're satisfied with the Separation ourselves and the S-12 Experimenter wants you to listen for the door opening when you activate that before the sleep period. Over.

08:36:59 C Say again, Dick, on the door.

08:37:02 CC When you activate S-12, the Experimenter would like to have you listen and see if you can hear the door opening.

08:37:11 C Roger. Will do that.

08:37:16 C Houston, Gemini IX. What are the latest plans for EVA in the morning? Are we going to do it with the ATDA or without it?

08:37:25 CC Tom, we're going to do it with the ATDA and we'll do the EVA preparation right after Re-Rendezvous. Over.

08:37:34 C Roger.

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08:37:37 CC If we do that Re-Rendezvous in daylight, which we would like to do down here, we're going to cut a little bit into your EVA preparation, but it still should give you about 3 hours and 45 minutes. Over.

08:37:50 C Okay. We'll probably be there when you get them.

08:37:54 CC Well, don't rush it. We think we'll give you plenty of time to do that but it will be after the Re-Rendezvous.

08:38:03 C How does the fuel budget look down there? It looks like we have plenty for using the Delta-H of 7 miles.

08:38:09 CC Yes. We think you're in good shape.

08:38:11 C Yes. I think we're in real good shape on the fuel. Okay, we're still keeping both Coolant Pumps A and B on. We're still a little warm in here.

08:38:25 CC Okay. You might as well leave them on until you cool down and we'll talk to you about the temperature over CSQ.

08:38:35 C Okay. Real fine, Dick.

08:38:47 CC IX, Houston. Tom, have you had a chance to look at that auxiliary receptacle yet?

08:38:53 C No, we're still busy trying to get some ... squared away. We'll do this in the next hour or so.

08:38:58 CC Okay. If you can't get that left one fixed, we've got it planned down here that you can use the right one, but we'll hold up and wait and see what you say about it.

08:39:08 C Okay.

08:39:31 CC IX, Houston. We've got 15 seconds to Tananarive at LOS. We'll see you later.

08:39:37 C Roger.

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## COASTAL SENTRY QUEBEC

08:55:25 CC Gemini IX, CSQ CAP COM.

08:55:29 C Gemini IX. Go, CSQ.

08:55:32 CC Roger. We show you GO on the ground. We'd like to inform you that we're going to command the L-Band OFF on the ATDA.

08:55:39 C Roger.

08:55:40 CC Roger. You can start your fuel cell purge any time now.

08:55:43 C Okay. I'm at purge.

08:55:53 CC And we also have a PLA and a Flight Plan update for you to copy when you're ready.

08:56:04 C Roger. Understand. I'll give you a call in a minute.

08:56:07 CC Roger.

08:57:03 P CSQ, Gemini IX. I'll go ahead and take some of those PLA updates and I'll have to stop you during - I'm still going on with the purge.

08:57:09 CC Roger. I understand. Area 7-3: at 10:08:32; RET 400K, 21 plus 06; RET RB, 26 plus 57; bank angle for all areas, roll left 85, roll right 95. Weather in this area is marginal. No Separation Maneuver is required for any area. Area 8-3: 11:44:18; RET 400K, 21 plus 02; RET RB, 26 plus 58. Weather marginal. Area 9-3: GET RC, 13:18:56; RET 400K, 20 plus 57; RET RB, 26 plus 57. Weather good. Area 10-Delta, that's Area one zero Delta: GET-RC, 14:17:05; RET 400K, 21 plus 34; RET RB, 26 plus 57. Weather good. Area 11-2: GET-RC, 15:51:56; RET 400K, 21 plus 23; RET RB, 27 plus 05. Weather good. Area 12-2: GET-RC, 17:25:56 ... weather good ... Did you copy?

09:00:32 P This is Gemini IX. Roger. We got all the updates, weather, and understand all ... bank left 85, bank

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## CONFIDENTIAL

right 95.

09:00:40 CC That's affirmative. No Separation Maneuver required.

09:00:44 P Roger. We got it, thank you.

09:00:46 CC Are you ready for a Flight Plan update?

09:00:49 P Stand by one.

09:01:24 CC Gemini IX. Be advised we're going to turn the adapter C-Band off on the ATDA.

09:01:32 P Roger. Understand, and you can go ahead with the update; our purge is complete.

09:01:37 CC Would you switch your Quantity Read switch to ECS O<sub>2</sub>?

09:01:41 P ECS O<sub>2</sub>.

09:01:45 CC Node at a time of 07:13:19: Rev 5, 95.3 east; right ascension. Then bring your Quantity Read switch to FUEL CELL O<sub>2</sub>. ... 20 hours 01 minutes. Title CL-12. Would you place your Quantity Read switch to FUEL CELL H<sub>2</sub>?

09:02:50 C Yes.

09:02:53 CC ... Time: 09:00:00 ... Sequence 01, after all overboard dumps. Do you copy?

## HAWAII

09:12:50 CC Gemini IX, Hawaii.

09:12:52 C Hawaii, IX.

09:12:54 CC Roger. Everything is looking good on the ground. We'd like for you to place your Quantity Read switch to FUEL CELL H<sub>2</sub> position, please.

09:13:00 C Roger.

CONFIDENTIAL

# CONFIDENTIAL

101

09:13:04 CC Roger. We're going to get a tape dump on you this pass. We have a Flight Plan update for you if you're ready to copy.

09:13:22 P All right, Hawaii. Gemini IX.

09:13:24 CC Okay. You probably have part of this. Node: 07:13:19; Rev 5, 95.3 east; right ascension, 20 hours 01 minute. S-12: 09:00:00; 01 after all overboard dump S-12: 17:00:00; 02. That's all.

09:14:22 P Gemini IX. Roger. We have node at 07:13:19; Rev 5, 95.3 east; right ascension, 20 hours 01 minute S-12: 09:00; 01 after all overboard dumps S-12: 17:00, 02.

09:14:43 CC That's 17:00:00, Sequence Number 2.

09:14:49 P I got it. Sequence 1 and Sequence 2.

09:14:51 CC Roger. And also there is a tropical storm that will be 77 miles south of your ground track at an elapsed time of 09:21:30, if you happen to be in the right attitude to look at it.

09:15:12 P Okay. We'll give it a try.

09:15:14 CC Okay. You can place your Quantity Read switch back to the OFF position.

09:15:25 CC Have you had time to get around to that auxiliary receptacle yet?

09:15:31 P Negative. We haven't.

09:15:32 CC Roger.

09:15:37 P It operates the camera all right. The problem we had was operating the sight. We've done a little switching around, but we can't -- we haven't really made any good thorough troubleshooting yet.

09:15:49 CC Roger. I understand.

09:16:08 CC Gemini IX, Hawaii.

09:16:10 P Go, Hawaii.

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09:16:12 CC The camera was what they were really worried about.

09:16:16 P Okay. We were pretty worried about the sight there for a while but we rigged it up from the right receptacle and the camera works okay from the left.

09:16:23 CC Okay. Very good.

09:20:30 CC Gemini IX, Hawaii. We have 30 seconds to LOS and are standing by.

09:20:35 P Gemini IX. Roger.

09:20:39 C Looks like we are going to miss that storm. We're pointed up and to the northwest right now.

## ANTIGUA

17:45:01 CC Gemini IX, Houston.

17:45:06 CC Gemini IX, Houston standing by for your call.

17:45:09 C Good morning, Houston. Gemini IX.

17:45:10 CC Good morning. How are you doing?

17:45:11 C Warmed up. We ran down to 0, 0, 0 degrees.

17:45:15 CC You say you do have your - started your power-up?

17:45:18 C Roger. Platform is up. Fairly well aligned.

17:45:22 CC Okay. Is your computer up yet?

17:45:24 C No. Get it up in just a second.

17:45:27 CC Okay. Like to have you turn it on and tell us whether you get a running light.

17:45:31 C Roger.

17:45:32 CC In PRELAUNCH.

17:45:37 C Computer coming ON.

CONFIDENTIAL

# CONFIDENTIAL

103

17:45:39 CC And while you're waiting you can turn the S-12 collector door CLOSED.

17:45:45 C Roger. We've already got the collector door closed.

17:45:48 CC Roger.

17:45:51 CC And I've got a R<sub>T</sub> change and some maneuver updates when you're ready to copy.

17:46:15 C Houston, Gemini IX. We have a Computer Running light at 8:26.

17:46:20 CC Very good. I'm glad to hear that. And let me know when you're ready to copy the R<sub>T</sub> and maneuver updates.

17:46:51 P Go ahead, Neil.

17:46:52 CC Okay. Your R<sub>T</sub> is now - that's Address 54, 74966. This is a fairly big change but we've checked it out.

17:47:08 P Understand. 54 is now 74966.

17:47:12 CC Roger. And your elevation angle of depression, angle to Aline the Platform, will be minus 9 degrees.

17:47:19 P Roger. Understand.

17:47:21 CC Okay. And don't forget that you've got to change Address 24.

17:47:27 P Okay.

17:47:30 CC Okay. We're ready for - your Height-Adjust Maneuver.

17:47:42 P Okay, shoot.

17:47:43 CC Okay. Let me give you the Phase-Adjust first. GET B: 18:23:19; Delta-V, 20.0; burn time, 3 seconds; yaw 0, pitch 0; Address 25, 00020; 26 and 27, all zeros; aft thrusters; Posigrade. I'll go ahead with the Height-Adjust now. GET B is

# CONFIDENTIAL

## CONFIDENTIAL

19:08:16; Delta-V, 17.0 burn time, 22 seconds; yaw 0, pitch 0; Address 25, 00170; Address 26, all zero; Address 27, zeros; aft thrusters, Posigrade. That's Height-Adjust. Go ahead.

17:48:47 P Okay. Now was that two Height-Adjust? Was the first one Height-Adjust also?

17:48:51 CC First one, Phase-Adjust.

17:48:53 P Okay.

17:48:56 P Phase-Adjust is at 18:23:18: 2 feet per second; 3-second burn; yaw 0, pitch 0; 25 is 00020; 26 and 27, all zeros; aft thrusters; Posigrade.

17:49:13 CC Roger. That's correct. I've got a node update.

17:49:18 P I'd like the GET Burn at Height-Adjust, please.

17:49:22 CC Okay. The GET Burn of the Height-Adjust is 19:08:16.

17:49:33 P Got 19:08:1 something.

17:49:36 CC That's 19:08:16.

17:49:41 P 16, Roger. And I copied the rest to be 17 feet per second; 22-second burn; yaw 0, pitch 0; 25, 00170; 6 and 7, all zeros; aft thrusters, Posigrade.

17:49:53 CC That's correct. And I have a node for you.

17:49:58 P Okay.

17:50:01 CC Its time is 16:14:21: Rev 11, 43 degree west; right ascension, 19 hours 50 minutes.

17:50:23 P Roger. Copied Node to be 16:14:21; Rev 11, 43 degrees west; right ascension, 19 hours 50 minutes.

17:50:34 CC Roger. That's correct. You can do a fuel cell purge between now and Canaries, which will be about 5 minutes or so from now. And they will have a block update on PLA's at Canaries and advise that their - they've got a shroud in work. Dave Scott's out at Los Angeles working on a -

CONFIDENTIAL

the procedures for it.

17:51:05 P Okay, fine. And you say go ahead with the fuel cell purge now?

17:51:09 CC Yes, that's correct.

17:51:12 CC And we're approaching LOS here. We'll give you the PLA's over Canaries.

17:51:17 C Roger. How are you reading us, Neil?

17:51:20 CC Reading you loud and clear, Tom.

## CANARY ISLANDS

17:56:14 C Flight. Gemini IX to Canary CAP COM.

17:56:17 C Canary, Gemini IX.

17:56:19 CC Roger. I have a PLA update for you when you're ready to copy.

17:56:22 C Can you give us a hack at a GET 17:57:00?

17:56:28 CC Roger. Will do.

17:56:32 CC 30 minutes, 30 seconds to hack.

17:56:45 P After the hack you can go ahead with the update.

17:56:47 CC Roger. Will do.

17:56:58 CC 3, 2, 1,

17:57:01 CC MARK. 17:57:00.

17:57:05 C Roger. Give us a hack at ten just for recheck.

17:57:07 CC Roger. 3, 2, 1,

17:57:11 CC MARK. Ten seconds.

17:57:13 C Roger. We're in sync.

## CONFIDENTIAL

17:57:15 CC Roger.

17:57:36 CC Gemini IX, are you ready for your PLA update?

17:57:41 P Roger. All set - any time.

17:57:44 CC Roger. 13-2: 19:02:32; 21 plus 22, 27 plus 22; roll left 85, roll right 95; weather, good; negative Sep Maneuver. 14-1: 20:28:25; 22 plus 35; 28 plus 25; roll left 85, roll right 95; weather, good; negative Sep Maneuver. 15-1: 22:06:07; 21 plus 11; 26 plus 59; left 85, right 95; weather, good; Sep Maneuver. 16-1: 23:41:40; - 21 plus 18.

17:59:26 CC Affirmative on a Sep Maneuver.

17:59:33 CC Gemini IX. The last three columns are all the same from here on out, so we'll just give you the first. Okay?

17:59:38 P Okay. And now what were the first two areas that you gave me?

17:59:43 CC Say again.

17:59:45 P Give me the first two areas, just the area. I got all the numbers but the areas on the first two.

17:59:50 CC Okay. The first area was 13-2; the second area 14-1.

17:59:57 P Okay. You can go ahead.

17:59:59 CC Okay. The next area is 17-2: 25:26:01; 21 plus 15; 27 plus 12. Could you put your Quantity Read switch to ECS O<sub>2</sub>?

18:00:20 P Roger.

18:00:24 CC Okay. Area 18-4: 28-:07:53; 21 plus 11; 27 plus 16. Area 19-4: 29:43:26; 21 plus 18; 27 plus 19. Area 20-3: - Gemini IX, give us FUEL CELL O<sub>2</sub>, please. Okay. - Area 20-3: 31:02:25; 21 plus 02; 27 plus 07; and give us FUEL CELL H<sub>2</sub>.

18:01:31 CC That's the end of the PLA update, Gemini IX.

CONFIDENTIAL

# CONFIDENTIAL

107

18:01:35 P Roger. The only question I have is 20-3 RET V. Please say again.

18:01:41 CC RET V for Area 20-3: 27 plus 07.

18:01:46 P Roger. And the only two that require Sep Maneuvers are 15-1 and 16-1. Is that correct?

18:01:51 CC That's affirmative. Negative on that. The Sep Maneuver comes from 15-1 through all the rest. 15-1 through 20-3. You have a Sep Maneuver with all of those.

18:02:03 P Roger. I've got them all.

18:02:05 CC Okay. Could you give us a Prop Quantity readout, please?

18:02:11 P Roger. Reading about 39 percent.

18:02:12 CC Roger. Copy 39.

18:02:19 CC We have you as GO on the ground here, Gemini IX. How did your fuel cells purge gc?

18:02:23 P Fuel cell purge went well and we're GO up here.

18:02:26 CC Roger.

18:02:54 CC Gemini IX, Canaries. We did - we have just turned the L-Band Beacon ON on the ATDA.

18:02:59 P Roger.

18:03:12 CC IX, Canaries. You can turn your Quantity Read OFF at this time.

KANO

18:04:23 CC Gemini IX, Houston. 1 minute from LOS at Kano.

18:04:29 C Roger. Houston. We're all set up for our burn.

18:04:41 CC Roger. Congratulations for making it past 7-3.

# CONFIDENTIAL



## CONFIDENTIAL

18:04:47 C Roger, Neil. Thank you.

18:23:19 C Rates adjust.

18:23:20 P Mark it.

18:23:25 P Okay.

18:23:29 C ...

18:23:33 P 82 is 0, 81 is minus 1, - and 80 is zero.

18:23:57 C The next burn ...

18:24:01 C Let's put the thing in RENDEZVOUS.

18:24:04 P Okay. The next burn is at 19:08:16.

18:24:09 C What about that time ...?

18:24:11 P Oh, yes. That's almost an hour away. 19:08:16.  
Okay?

## CARNARVON

18:33:44 CC Gemini IX, Carnarvon CAP COM.

18:33:48 C Carnarvon, IX.

18:33:49 CC Roger. How did the Phase-Adjust go?

18:33:51 C On time and all residuals zero.

18:33:53 CC Roger. Would you give me a readout of AMU H<sub>2</sub>, O<sub>2</sub> pressure and temperature.

18:34:05 P Okay. Temperature is holding and has been holding at about 65 degrees and pressure is locked on 85 psi.

18:34:15 CC Roger.

18:34:21 CC I have a Flight Plan update. A short one for you when you're ready to copy.

CONFIDENTIAL

# CONFIDENTIAL

109

18:34:28 P Stand by one.

18:34:51 P Okay, Bill, go ahead.

18:34:55 CC Okay. At 19 hours, 19 minutes: Antigua, Rev 13; a GO/NO-GO for 31-1. At 19 hours 30 minutes: Canaries, Rev 13; a crew status report.

18:35:17 P Say that time again at Canaries for crew status?

18:35:20 CC 19 plus 30.

18:35:21 P 19 plus 30. Roger.

18:35:25 CC Okay. And I also have a star update for you.

18:35:44 P Okay. Go with the star update.

18:35:47 CC Okay. Time: 19:08:16; and I don't know if I can pronounce it, but I'll give it a try, Alpheratz, or would you buy Alpheratz? It's 3.5 degrees up and 4 degrees left.

18:36:06 CC That's Alpheratz.

18:36:08 P Alpheratz sounds good. 19:08:16; 3.5 up; 4 left.

18:36:12 CC Roger.

18:36:36 CC Gemini IX, Carnarvon. We're coming up on LOS in about 40 seconds.

18:36:47 P Gemini IX. Roger.

19:07:24 C We're approaching Height-Adjust for the third rendezvous. Delta-V to be applied is 7-8 feet per second Posigrade at 19:08:16.

19:07:47 C ... rate.

19:07:59 C An Alpha burn should do it.

19:08:02 P Okay. Don't forget Plat.

19:08:12 P 10, 13, 14, 15 -

19:08:17 P MARK.

# CONFIDENTIAL

## CONFIDENTIAL

19:08:18 C Mark it.  
19:08:39 P Okay.  
19:08:44 P That's good ...

## HOUSTON

19:18:50 CC Gemini IX, Houston.  
19:18:24 CC Gemini IX, Houston.  
19:18:40 C Hello, Houston. Gemini IX. How do you read?  
19:18:42 CC Roger, Tom. Read you loud and clear. How me?  
19:18:45 C Roger. Read you loud and clear now, Neil.  
19:18:48 CC Okay. Could you give us a Peroxide Temperature, please?  
19:18:52 C Roger. 65 degrees.  
19:18:55 CC Roger. 65 degrees. And I have an NSR update for you when you're ready to copy.  
19:19:02 C Roger. Stand by.  
19:19:06 C Ready to copy.  
19:19:08 CC Okay. GET B: 19:53:27; Delta-V, 14.3; burn time, 25 seconds; yaw 180, pitch 20 down, 20 down; Address 25, 00134; Address 26, 90049; Address 27, zeros; forward thrusters; Posigrade Up. Go ahead.  
19:20:00 P Houston, Gemini IX. You were coming in somewhat broken on that. NSR update: GET B is 19:45:27; Delta-V is 14.3; duration is 25 seconds; yaw 180, pitch 20 down; 25, 00134; 26, 90049; 27, zeros; forward; Posigrade Up.  
19:20:32 CC That's correct except I'd like to correct your GET B. That's 19:53:27. Go ahead.  
19:20:43 P Roger. Got 19:53:27 GET B.

CONFIDENTIAL

# CONFIDENTIAL

111

19:20:47 CC That's right. And we're using the forward thrusters here so that you all have - you won't have to turn around and lose radar lock and that stuff.

19:20:56 P Fine. Thank you.

19:20:58 CC Okay. Give us Prop Quantity, please.

19:21:03 C Roger. Prop Quantity is 35 percent.

19:21:07 CC Okay. 35. And you'll have a crew status report over Canaries in about 10 minutes or so. Like to tell you what the maneuver plan is right now.

19:21:19 C Okay.

19:21:21 CC Okay. After NSR you'll have about an hour and five minutes before TPI and you'll be hitting TPI just about sunrise, and the rest of the maneuver from TPI on in will be in daylight.

19:21:39 C Roger.

19:21:41 CC And we're talking about seeing whether we can get the lights on for you before TPI, for backup.

19:21:49 C How's the power doing on the ATDA? Is it getting pretty low?

19:21:54 CC Yes. We don't have any too much in those squib batteries.

19:21:58 C Okay.

19:22:06 CC How'd your Height Maneuver come out?

19:22:08 C All residuals were zero. We had ...

19:22:12 CC Very good.

19:22:17 C We're yawing around now to 180.

19:22:22 CC Okay. Like to advise you you're GO for 31-1.

19:22:26 C Roger. 31-1.

# CONFIDENTIAL

## CONFIDENTIAL

19:22:30 C How are things in Houston this morning?

19:22:32 CC Oh, we're busy as beavers down here.

19:22:35 C I can imagine.

19:22:47 P You guys keep some terrible hours down there.

19:22:51 CC Yes. You do, too. Astros lost last night to Pittsburgh 7 to 2.

19:22:58 P How'd the Cubs do?

19:23:01 CC Stand by.

19:23:03 CC Cubs lost 8 to 6 to Cincinnati.

19:23:08 P I'm a double loser.

19:23:10 CC You've got to expect a few losses.

19:23:40 CC We've just been talking to Dave Scott and Jim McDivitt at some length. They've been climbing around the shroud out at Douglas for the last few hours and they advised the outside is no problem. The inside may turn out to be a problem. There's quite a few sharp edges and things on the inside, cotter keys, and one thing or another.

19:24:06 C Roger.

19:24:59 CC Did you happen to just punch START COMP or change modes or something in the computer?

19:25:05 C Yes. I checked out my load at 25, 6 and 7.

19:25:09 CC Okay. Big Brother's watching down here.

19:25:13 C Roger, Neil. Looks like our computer has cleared up completely. It was only about the first day after you know ... when we ran into this problem, and late yesterday evening everything looked real good.

19:25:25 CC Okay, Tom. It looks all okay on the ground to us, too.

CONFIDENTIAL

# CONFIDENTIAL

113

19:25:29 C Okay. I don't know what the glitch was.

19:25:32 C Also, we changed cords and I had Gene's utility cord, so I've got my camera in the optical sight going okay over here.

19:25:40 CC Roger. I understand.

19:26:01 CC Do you have - you don't have the radar on yet, do you?

19:26:06 C No, I don't. You want me to turn it on?

19:26:08 CC Stand by.

19:26:13 CC Yes, we'd like to have you turn it on and see if you can get a lock, and maybe you can report a range reading over the Canaries and help FIDO a little bit here.

19:26:23 C Roger. We got it too. Stand by.

19:26:32 CC We're not going to have much track after N<sub>SR</sub> to help you out with.

19:26:38 C Okay.

19:27:27 CC Houston's about to have LOS at Antigua.

19:27:31 C Roger. Neil, we're trying to Aline the Platform BEF.

19:27:33 CC Right.

## CANARY ISLANDS

19:32:04 CC Gemini IX, CAP COM. We have a valid oral temp on both Pilot and Command Pilot.

19:32:14 C Roger. We have forward radar lock. We'll give you some ranges.

19:32:17 CC Roger. I have a coelliptic update when you're ready to copy.

# CONFIDENTIAL

## CONFIDENTIAL

19:32:24 C Go ahead.

19:32:27 CC GET B: 19:54:24; Delta-V, 14.4; burn time, 0 plus 25; yaw 180, pitch 38 down; Address 25, 00114; Address 26, 90089; Address 27, all zeros; thrusters forward; Maneuver Posigrade and Up; Coelliptic. Do you copy?

19:33:04 P Roger. NSR update: GET B is 19:54:24; 14.4; 25 seconds burn time; yaw 180, pitch 38 down; 25 is 00114; 26 is 90089; 27, all zeros; forward thrusters; Posigrade Up.

19:33:28 CC That's affirmative, Gemini.

19:33:44 P Canaries, we're now at 83.8 miles.

19:33:48 CC Roger. Copy.

19:33:57 CC Gemini IX. We're standing by for your food report.

19:34:02 C Roger. We have consumed 4-1/2 meals and 110 ounces of water.

19:34:10 CC Roger. 110 ounces.

19:34:50 CC Gemini IX, could you also give me a sleep report?

19:34:55 C We had eight hours of dozing.

19:34:58 CC Roger. Copy.

19:36:20 P Canaries, we're at 82.3 miles with a Range-Rate of 69 feet per second.

19:36:26 CC Roger. Copy.

## HOUSTON

19:39:56 CC Gemini IX, Houston standing by.

19:39:59 C Roger, Houston. We're Alining the Platform and approaching NSR.

19:40:03 CC Okay. It looks like you've got good radar. We are willing to turn those lights on for you if you think you'd like to have them prior to TPI.

CONFIDENTIAL

# CONFIDENTIAL

115

But it would mean that you'd have to turn them off, you'd have to send a Command to turn them off, just as soon as you got in daylight. Thought you wouldn't need them.

19:40:25 C Okay. ... turn them on right at the last minute and then we can ... It's getting daylight.

19:40:36 CC I didn't copy you there, Tom.

19:40:40 C Turned the ACQ lights on at the latest possible station and we will turn them off as soon as we hit daylight.

19:40:49 CC Okay. We'll do that. We'll turn them on at Carnarvon. That's at 20 hours and about 12 by 20 hours and 10 minutes.

19:54:02 P Okay. Coming up on the N - NSR burn at 19:54:24 for the Rendezvous from above; 10 seconds to initiate, - in RATE COMMAND.

19:54:12 P 2, 1 -

19:54:25 P Burn it.

19:54:27 P Clock is started.

19:54:49 C ... is the ...

19:54:51 C Okay. 81, - 82 is minus 02, 81 is 01.

19:55:33 C Looks good. 80 is zero. That's good.

19:55:37 P Okay. Starting the clock in NSR.

19:55:41 C Roger.

19:55:44 C And we have about 32 percent fuel remaining.

19:55:54 P 32.

19:56:08 P You can set your clock if you like.

19:56:11 P Now, let's see. Coming up on 2 minutes now. So you can set it to 3 or 4.

# CONFIDENTIAL



## CONFIDENTIAL

19:57:08 P What have you got your clock set for?

19:57:10 C 3 minutes.

19:57:14 P Okay. About 10 seconds here.

19:57:24 P 3, 2, 1 -

19:57:25 P Mark it.

19:57:26 P Three minutes. Did you get it?

19:57:27 C Yes.

19:57:29 P 7, 8, 9, 10. Okay?

19:57:54 P Go into RENDEZVOUS with 4 minutes and see what happens.

20:00:18 C ... we're down 10 degrees already ...

20:00:25 P Give me an angle and I'll get it for you the next time.

20:00:30 P ...

20:00:31 C MARK.

20:00:34 C ...

20:00:46 P Yes. Nominally we're pretty close on this.

20:00:47 C ...

20:00:54 P Let's see there's - F-189 is NOMINAL.

20:00:58 C We're supposed to Aline the Platform.

20:01:00 P At 9 degrees; that's right.

20:01:02 C ...

20:01:03 P So go ahead.

20:01:10 P Right now ... is .01 but we'll have what happens here.

CONFIDENTIAL

# CONFIDENTIAL

117

20:01:12 P Yes.

20:01:13 C ...

20:01:18 P That's only one - -

20:02:10 C Did you happen to find my sunglasses ...

20:02:12 P - - It's right up here.

20:02:13 C Good show!

20:03:01 P Okay. All the numbers are in.

20:03:47 C ...

20:03:48 P Do I have any? Yes. I've got some here somewhere.

20:03:51 P I read 69 here at 9 minutes. We passed 9 minutes.

20:03:54 C Copy. 9 minutes.

20:04:25 P Here you are, Tom.

20:04:32 C I'll just have one piece.

20:04:36 P You can have both if you want to.

20:04:38 C I've got a bunch of them.

20:04:49 P Yes. Between us we have plenty.

20:05:14 P ... this is going to be a real bear, you know it?

20:05:17 P I wonder if I should put that suit fan on?

20:05:24 C ...

20:05:25 P This one over here.

20:05:27 C You've got the Polaroid, don't you?

20:05:58 P Much better.

20:06:01 C Yes. We ... should stay on better ...

20:06:20 P What time have you got?

# CONFIDENTIAL

## CONFIDENTIAL

20:06:21 C 11 ...

## CARNARVON

20:07:17 CC Gemini IX, Carnarvon CAP COM.

20:07:23 C Carnarvon, IX. Go.

20:07:26 CC Roger. Would you turn the Tape Recorder Power circuit breaker OFF?

20:07:30 C Roger. OFF.

20:07:35 CC Would you verify the Telemetry Standby Control switch is OFF?

20:07:40 C OFF. It's OFF.

20:07:42 CC Roger.

20:07:51 C Delta, Delta-R still looking good?

20:07:53 P That's affirm. .0. .0.

20:07:56 CC Could you give us a Prop Quantity readout.

20:07:58 C Roger. 32 percent.

20:08:01 CC Roger.

20:08:04 CC How did the NSR burn go?

20:08:05 C On time and 80 was 0, 81 was one tenth, and 82 was about two tenths.

20:08:12 CC Roger.

20:08:16 P Point 50 ... with 59.

20:08:26 CC I've got a Terminal Phase Backup for you when you're ready to copy.

20:08:32 C Stand by.

20:08:36 C Okay. Go.

CONFIDENTIAL

# CONFIDENTIAL

119

20:08:38 CC GTV: 20:55:28; GTN<sub>SR</sub> 01:01:04; Delta-V, 16.7; burn time, 0 plus 21; Core 25, 90147; Core 26, 00075; Core 27, 00020; 16.54; 0.3 up and 2.5 right; range 16.3 nautical miles; Range-Rate 64 feet per second; azimuth, 178.5 right; elevation, 27.4 down; range and Range-Rate are 2 minutes and 10 seconds prior to TPI.

20:09:48 P This is Gemini IX. Roger. We got the Backup. Thank you.

20:09:51 CC Roger.

20:10:22 CC Would you give me a range and Range-Rate?

20:10:38 C Right now we're 54.3 miles.

20:10:45 CC Roger.

20:10:48 C And 86 feet per second.

20:10:50 CC Roger.

20:10:58 CC The ACQ lights are on, IX.

20:11:00 C Roger.

CC Gemini IX, Carnarvon. We're one minute to LOS.

C Roger ...

P Carnarvon. Gemini IX is at 51.9 miles, 88 feet per second. Address 84 is not reading out properly, so negative angle at this time.

CC Roger.

HOUSTON

20:51:52 CC Gemini IX, Houston standing by.

20:52:29 C From the rendezvous from above, we have reflected moonlight on the target.

20:52:42 P What's the range?

# CONFIDENTIAL

## CONFIDENTIAL

20:52:43 C 20 miles?

20:52:44 P Range is about 20 miles, Tom.

20:52:51 P We're going to initiate after the ground time, but that's all right because we're - if you've got it, that's all that counts.

20:52:54 C ...

20:52:57 P 59 minutes. We'll get good angles.

20:53:01 CC This is Houston. No answer required. Remember to turn ACQ lights off.

20:53:08 C Roger. Neil, we have no ACQ lights. Thus far I've got him in reflected moonlight at 20 miles.

20:53:14 CC Roger. Understand.

20:53:22 C Right on the angle.

20:53:38 P 21 miles.

20:53:55 P 18.7 initiate.

20:54:00 P Houston, Gemini IX. Elevation 200.9; range 21.04.

20:54:09 CC Roger.

20:54:11 P Okay. At 40, Tom.

20:54:13 C Pretty good. Turn the ACQ lights OFF at 40 ...

20:54:17 P Roger.

20:54:22 P Okay. At 40 I want ... 21.

20:54:32 P Here's where we are Tom.

20:54:34 C Where's it, Gene?

20:54:36 P Right there.

20:54:37 C Good show! Got NOMINAL, right?

20:54:41 P The next one is probably going to be Point B.

CONFIDENTIAL

# CONFIDENTIAL

121

20:54:43 C Here comes sunrise and I may lose the ATDA.

20:54:45 P Okay at 40 -

20:55:00 P Okay, I want an angle at 40.

20:55:10 P 201.7 not quite in. No it's .8.

20:55:24 C We're still in reflected moonlight and now going to reflected sunlight. We can break out into the dawn.

20:55:37 P Houston. Elevation at 201.7; range 19.2; Range-Rate 70.

20:55:46 CC Roger.

20:55:48 P Right. This one is going to be Point B at 220. Hold onto him if you can.

20:55:53 C ... get ...

20:56:00 P Are you holding onto him?

20:56:05 C Yes.

20:56:10 C Yes. I've got him in reflected sunlight.

20:56:15 P This is Point B coming up.

20:56:17 C And ...

20:56:21 P 220 at the time.

20:56:22 C Okay. I'll be on him.

20:56:28 P It might even be Point C, so hold onto it.

20:56:42 P Okay.

20:56:43 C Stand by.

20:56:44 P Okay.

20:56:45 C Got him.

20:56:59 P That was Point B.

# CONFIDENTIAL

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20:57:00 C Still have him in reflected sunlight in a sunrise now.

20:57:15 C Caught like a particle of dust.

20:57:28 P Houston, Gemini IX. Elevation 203.0; 18.82 miles; 66 feet per second.

20:57:36 CC Houston. Roger.

20:57:37 C Starting to loose him.

20:57:38 P That was Point B, Tom.

20:57:39 C Come on, hang on. That's all.

20:57:40 P You don't have him?

20:57:41 C No. That's all she wrote.

20:57:42 P Okay. That's 4 minutes. ...

20:57:43 C Lost him just before - Point C, in the clouds.

20:57:45 CC Houston's commanded ACQ lights OFF.

20:57:48 P See you in the clouds.

20:57:51 P The next point is Point C though. I may not get a backup - yet I may.

20:57:56 C Okay. I'm flying radar needles.

20:57:58 P Okay.

20:58:03 P Don't let me miss - 5, 4 minutes. Okay?

20:58:04 C Yes.

20:58:20 P Okay. Is that 4 minutes?

20:58:23 C 4 minutes and 4 seconds to go.

20:58:24 P Okay.

20:58:26 P Mark it.

CONFIDENTIAL

# CONFIDENTIAL

123

20:58:27 C Got it! Now one was an optical angle. The other was radar. Sorry about that, Gene.

20:58:31 P That's all right.

20:58:36 P What's Point C?

20:58:37 C Point C is 37. Looking pretty good. Want to push START COMP?

20:58:45 P ... two way ...

20:58:47 C I know he's out there. I can't see him at all.

20:58:55 P Push START COMP.

20:58:56 C START COMP pushed.

20:59:02 C 19 forward, 2 left and 4 down. Would you believe it?

20:59:10 P Okay. Well they gave - I don't like the down.

20:59:12 C I don't either.

20:59:16 P Houston, Gemini IX. Elevation 204.2; range 17:72. Don't let me - -

20:59:21 CC Houston. Roger.

20:59:25 P - - Ground gave 60.5 forward, 3/10ths up, and 205 - 2.5 right and you have left.

20:59:34 C What do you have?

20:59:36 P I don't have it, Joe. I've got to get Point D at 5:40. 204.2 and 7/10ths.

20:59:38 C ... I'll get it.

20:59:42 C Houston. Closed-Loop is 20 forward, 2 left, 3 down.

20:59:48 P I don't like the down, Tom. Because we're coming - -

20:59:49 CC Got it.

# CONFIDENTIAL



## CONFIDENTIAL

20:59:50 P -- we're coming down.

20:59:51 C Yes. I don't like the down either. The down doesn't look good from here at this time.

20:59:53 C Telemetry doesn't look good from here at this time.

20:59:54 P Okay. 5:40, Tom. This is my angle for backup.

20:59:58 C Okay. I'm on the radar needles for you.

21:00:04 P Mark it.

21:00:05 C Right. I sure did.

21:00:12 P 20 -

21:01:45 P Houston, Gemini IX. Data point D is 206.0; 16.60 miles; Range-Rate, 66.

21:01:53 CC Houston. Roger.

21:01:57 C Houston, this is IX. We're taking the backup solution, staying Closed-Loop.

21:02:01 CC Roger. Understand.

21:02:07 C Backup reads 17 forward and 3 up; 17 forward and 3 up.

21:02:12 CC Houston. Roger.

21:07:22 C Houston. Gemini IX transmitting into blind. We will Aline Platform after five minutes. Have 30 percent fuel remaining.

21:07:29 CC Roger, IX. Canary CAP COM. Roger. We copy.

21:07:35 C Roger. We will Aline Platform. The Closed-Loop is cranking and we used a backup solution. We have 30 percent fuel remaining.

21:07:43 CC Roger. Copy.

21:07:45 C And we cannot see him against the sunlit ocean below, even though we are down to 12 miles.

CONFIDENTIAL

# CONFIDENTIAL

125

21:07:49 CC Roger.  
21:07:52 C Radar is doing beautiful.  
21:08:23 P Canary, this is Gemini IX. Last point: elevation, 215.6; range, 11.7 miles.

## CANARY ISLANDS

21:10:01 P Canary, this is Gemini IX. We're up, Alining. No angle. No Range-Rate. We're at 10.21 miles.  
21:10:16 CC Roger.  
21:11:48 C Canary, this is Gemini IX. We're Alining and I do not get any range or Range-Rate out of the computer at this time.  
21:11:55 CC Roger, Gemini IX.  
21:13:35 P Houston, Gemini IX, or Canary, Gemini IX. Elevation, 227.2; 7.18 miles.  
21:13:41 CC Roger.  
21:13:43 C And we're passing over the sand dunes of the Sahara and note also some of the lava flows here and we're looking straight down at him and I still can't see him.  
21:13:51 CC Roger, IX.  
21:13:56 C Still no visual contact with the target at this time. We're at 7 miles.  
21:14:00 P Right here, Tom. Right inside. See?  
21:14:06 C Yes.  
21:14:07 P Shall we - -  
21:14:08 C We'll whip the stuff out of him.  
21:14:10 P - - ... break.  
21:14:13 P Should give us a boosting error at 11:40.

# CONFIDENTIAL

## CONFIDENTIAL

21:14:19 C Say, there's the sand dunes. I'll photograph one. Now don't worry about me. We'll make the rendezvous.

21:14:25 P You ought to see him come across that.

21:14:29 C Oh, shoot!

21:14:36 P Computer lights are ON. Got anything yet?

21:14:44 C ... 4 forward, 5 left, and 1 up.

21:14:48 P 4 aft.

21:14:49 C 4 forward - -

21:14:50 P - - 4 aft - -

21:14:51 C - - 3 aft, - 4 aft.

21:14:52 P 4 aft.

21:14:53 C 5 left, 1 up. Looking good.

21:14:57 P Take the 1 up and 4 aft. I don't care about the 5 left. It's up to you.

21:15:03 C Do you want the 1 up?

21:15:04 P Yes. I'll take the 1 up.

21:15:06 C ...

21:15:07 P Yes. You can take the aft.

21:15:08 C Yes. ...

21:15:25 P Do you take the left or half of it?

21:15:27 C Half of it.

21:15:33 P Okay. 13 minutes I want an angle, Tom. - Okay? What are we coming up on, 12 minutes or 13?

21:15:43 C 13.

21:15:44 P Okay.

CONFIDENTIAL

# CONFIDENTIAL

127

21:15:49 P Mark it.

21:16:10 P Canary, this is Gemini IX. Elevation, 233.9; 5.79 miles; 51 feet per second.

21:16:21 CC Houston standing by.

21:17:57 CC Houston standing by.

21:17:59 C Roger, Houston. We're down to a little over 3 miles, looking straight down into the Sahara Desert and no visual contact. We're locked on forward on radar.

21:18:09 CC Understand.

21:18:12 P Houston, elevation is 238.4; range, 5.06; Range-Rate, 49.

21:18:23 CC Houston. Roger.

21:20:05 C Houston, this is Gemini IX. Elevation, 244.0; range, 4.31; Range-Rate, 44.

21:20:14 CC Houston. Roger.

21:20:20 CC Houston is one minute to LOS.

21:20:22 C Roger.

21:20:31 CC Okay, IX. Houston. Advise your fuel cutoff is 5 percent on the gage.

21:20:44 C Down to 3 miles and still no visual contact with the target centered on.

21:20:49 CC Houston, Roger.

21:21:08 C Houston, Roger. Finally have a look at what's down there and request ...

21:21:14 CC Houston. Roger.

CARNARVON

21:42:03 C Hello, Houston. Gemini IX.

# CONFIDENTIAL

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21:42:07 CC Go ahead, IX. This is Carnarvon.

21:42:09 C Okay, Carnarvon. We're in position with them. We have 18 percent fuel remaining.

21:42:15 CC Roger.

21:42:16 C And what's our status now on EVA?

21:42:21 CC Stand by one.

21:42:33 C Carnarvon, Gemini IX.

21:42:39 CC Go ahead, IX.

21:42:41 C It's going to take us a lot of fuel to stay here for EVA for three hours.

21:42:44 CC Roger. Understand. Stand by one. I'll talk to Flight.

21:43:15 CC Gemini IX, Carnarvon.

21:43:17 C Go ahead, Carnarvon.

21:43:19 CC We'd like you to go ahead and stationkeep until you get to the States and we'll brief you over the States, and go ahead and continue with your EVA preparation.

21:43:30 C Good.

21:43:56 CC Gemini IX, Carnarvon.

21:44:03 C We don't have a chance to do anything for a little bit here.

21:44:07 CC Okay. Well, we're standing by here if you want to start the purge.

21:44:10 C Okay. I'll go purge them.

21:44:42 CC Gemini IX, Carnarvon. Would you turn off the L-Band radar?

21:44:48 C Roger. You mean our L-Band?

CONFIDENTIAL

# CONFIDENTIAL

129

21:44:52 CC Okay.

21:44:55 C Are you talking about our L-Band?

21:45:01 CC That's affirmative.

21:45:06 C It's OFF.

21:45:53 C Carnarvon, Gemini IX. Are we still in contact?

21:45:56 CC That's affirmative.

21:45:58 C It appears I've got about 17 percent fuel.

21:46:01 CC Roger.

21:46:02 C And we're going to go through a lot of it station-keeping during 3 hours. Would you pass that on to Flight?

21:46:10 CC We copy.

21:46:11 CC Will you last?

21:46:12 C Roger. Now that we look at the problem, this is going to take quite a bit of fuel to stationkeep here for three hours, compared to the EVA.

21:46:20 CC Roger. We understand.

21:46:22 C Better delete from our preparation period ...

21:46:26 CC Roger.

21:46:38 CC IX, Carnarvon. We'd like you to go ahead with your eat period and minimize your usage of the fuel. We'll talk to you over the States.

21:49:27 CC Gemini IX, Carnarvon.

21:49:30 C Go ahead, Carnarvon.

21:49:31 CC Would you place your Quantity Read to ECS O<sub>2</sub>?

21:49:58 CC FUEL CELL O<sub>2</sub>.

21:50:10 CC FUEL CELL H<sub>2</sub>.

# CONFIDENTIAL

## CONFIDENTIAL

21:50:23 CC Quantity Read to OFF and we're standing by.

## CANTON ISLAND

22:04:57 CC Gemini IX, this is Houston.

22:05:01 C Roger, Houston. How do you read?

22:05:06 C Houston, Gemini IX.

22:05:08 CC Roger. We're reading you loud with a little garble. Advise we'd like to look at your station-keeping between here and the States to see what your fuel consumption does. Like to have your evaluation of how you think you will be able to do stationkeeping and EVA preparation at the same time.

22:05:32 C Okay. We both just finished talking it over. Right now we're both pretty well bushed. But I'm afraid it would be against my judgement to go ahead and do the EVA at this time. We've got about, I'd estimate about 16 or 17 percent fuel remaining and if we did all the experiments which we have planned and everything else, Gene and I talked it over, and we think it might be better for both of us to knock it off for awhile. Do some experiments and try in the morning, unless you have a specific plan with the ATDA out here where we can do some good with it. I don't see where we can gain a whole lot. Over.

22:06:17 CC Roger. Tom. I followed that. Probably - we're about two minutes to LOS. We'll be talking to you here at the States. We have acquisition at 22:23.

22:06:35 C Roger. 22:23. I think we might be able to stretch it on fuel with the shortage and do some experiments later ... and if we could accomplish some specific task I'd say GO. We're also - both of us are pretty well beat out at this time

22:06:50 CC Okay. We'll see you in about 15 minutes.

CONFIDENTIAL

# CONFIDENTIAL

131

## GUAYMAS

22:22:26 CC Gemini IX, Houston.

22:22:28 C Gemini IX. Go.

22:22:31 CC Roger. It's the Ground recommendation that we postpone the EVA activity until the third day. Would you agree with that?

22:22:42 C We concur very heartily with that recommendation.

22:22:47 CC Roger. Good. The next thing we'd like to do is fire up the ATDA A-ring during this stateside pass and cycle the rates and the cone. Would you be in a position to observe and photograph that activity?

22:23:06 C Roger. We're headed on the stateside pass and I'm in the sunrise right now, Neil. My camera is all set up; be able to follow the whole works.

22:23:14 CC All right. We'd like to have a word from you when you think the lighting will be satisfactory and you're in a good position to begin that activity.

22:23:27 C Okay.

22:24:47 P Houston, this is Gemini IX.

22:24:49 CC Go ahead.

22:24:51 P Were you able to find out, Neil, whether there is anything we could do EVA to the TDA that might afford us some docking?

22:24:59 CC We've looked into it rather extensively and we had some possible action. However, we did not have a very high confidence level in this action.

22:25:13 P Tom and I discussed this whole thing and I guess the real little real-time evaluation of what we have done in the past 20 hours or so and what we've got to do leads us to believe probably that the third day EVA might be better.

# CONFIDENTIAL



## CONFIDENTIAL

22:25:28 CC Roger. We're in agreement with that at this point, and we're continuing the flight planning activity in that direction.

22:25:35 P That's better.

## TEXAS

22:27:24 CC IX, we're over about the middle of Texas pass. Now we're standing by for your recommendation.

22:27:31 C Okay. We're set to photograph -- go ahead and turn on the RCS if you want to.

22:27:38 CC Okay. We'll let you know as we do each action here.

## HOUSTON

22:28:39 CC IX, Houston standing by here. We're waiting for telemetry from the ATDA. Should have it squared away in a second.

22:28:48 C Roger.

22:29:38 CC Select an RCS A now.

22:29:41 C Roger.

22:29:48 C We're taking pictures.

22:30:07 C Neil, same thing happened, same drift rates.

22:30:10 CC Okay.

22:30:56 C It still has the same rates, Neil.

22:30:59 CC Okay. We're still about a few seconds away, I guess. Hope we don't run you out of film.

22:31:16 CC RCS power ON.

22:31:27 C Hurry up. Let's stop it right away. ...

CONFIDENTIAL

# CONFIDENTIAL

133

22:31:34 C Now it's stopped.

22:31:36 CC Roger.

22:31:41 C Looks like it's pretty well damped.

22:31:42 CC Roger.

22:31:53 C Right away it starts drifting now. You turned it ON and OFF. Now it's started to roll to the left; estimate about two degrees per second, maybe three.

22:32:01 CC Roger.

22:32:04 C Give us the Mark when you turn it on.

22:32:05 CC Okay.

22:32:13 CC Okay. Go into high-rate.

22:32:32 C I didn't see it fire there at all.

22:32:35 CC Okay.

22:32:46 C We're still in low rate, Neil.

22:32:48 CC Okay.

22:32:51 CC High rate.

22:32:53 CC MARK.

22:32:57 C There it goes. It's really kicking up through RCS, Neil.

22:33:00 CC Roger.

22:33:07 CC Okay. We're going to cycle the nose cone now.

22:33:10 C Okay.

22:33:17 C Let us know when you cycle it.

22:33:22 CC Okay. We're coming up on Rigidize.

22:33:39 C Thrusters are still continuing to fire quite a lot. We're just about regular reentry, Neil.

# CONFIDENTIAL

## CONFIDENTIAL

22:33:45 CC Okay. Rigidize.

22:33:50 C Oh, they're really tossing the thruster fuel out now.

22:34:08 C Those thrusters are firing just about ... pretty good duty cycle.

22:34:14 CC We're with you.

22:34:17 C Now they're still firing.

22:34:31 CC Okay. We're going to Unrigidize now.

22:34:35 C Stand by to reload the film.

22:34:45 C Go ahead.

22:34:59 C Hold off. We're right in the sun now.

22:35:03 CC Okay. We're going to lose the carrier here pretty soon.

22:35:21 C Okay. Go ahead now. Look at those thrusters. Those thrusters are really going through a rapid duty cycle, at least of 50-50.

22:35:34 CC Go into low rate now?

22:35:56 C He should be out of RCS fuel before long.

22:36:09 CC Okay. We're getting T/M dropout now.

22:36:13 C Do you want to set us up for a Separation Maneuver from it?

22:36:18 CC Stand by.

22:36:21 C Do you want us to stationkeep for another revolution?

22:36:23 C I've got about 12 percent fuel.

22:36:26 CC Okay. We're going to be at Canary in a few minutes. We'll give you that dope there. What's your Propellant Quantity now?

CONFIDENTIAL

# CONFIDENTIAL

135

22:36:31 C Roger. 12 percent, about 12 to 13 percent.

22:36:34 CC Okay. Tom.

22:36:39 C Man! Those RCS thrusters are still firing real rapidly.

22:36:42 CC Okay.

22:37:01 CC We lost T/M but we're going ahead and sending RCS OFF.

22:37:05 C Roger.

22:37:11 CC Tell us if you see it stop firing.

22:37:12 C It stopped.

22:37:14 CC Okay.

22:38:35 CC Okay. We're approaching LOS at Bermuda, Tom. Canaries will pick you up in three to four minutes.

22:38:40 C Roger.

22:42:47 CC Gemini IX, Canary CAP COM.

22:42:51 C Roger, Canary. We're about 3 feet away from the Monster taking some pictures. Go ahead.

22:42:55 CC Okay. We'd like for you to do a 3-foot-per-second Retrograde Maneuver at your convenience and give us the time, please.

22:43:03 C Roger. We're still snapping pictures.

22:43:06 CC Okay. We're standing by. All systems look good.

22:43:16 P Except the one we're taking a picture of!

22:44:43 C Canary, this is IX here. We're going to have plenty of documentary evidence of what caused the failure.

22:44:47 CC Say again, IX?

22:44:49 C Roger. We're going to have plenty of documentary

# CONFIDENTIAL

## CONFIDENTIAL

evidence as to what caused the failure.

22:44:54 CC Roger. We're in the process right now of turning the L-Band ON for you.

22:44:57 C Okay.

22:45:11 CC Gemini IX, we'd like for you to conserve as much fuel as you can from here on out and we'll update you later on the flight time.

22:45:21 C Okay. We are slowly drifting away from it and after we get squared away and finish our pictures here I won't use any more fuel. We'll go ahead and do 3-foot-per-second Retrograde.

22:45:30 CC Roger. Copy.

22:53:57 CC Gemini IX, Houston. Standing by.

22:53:59 C Roger. We're getting squared away for our 3-foot-per-second Retrograde Burn. We've still got him in sight, exposed a lot of film, and hope to give you a call over Carnarvon or Tananarive.

22:54:12 CC Roger. We're standing by. All we need is the time and velocity of the burn.

22:54:16 C Roger.

23:02:47 C Hello, Houston. Gemini IX.

23:02:58 C Hello, Houston. This is Gemini IX.

23:03:11 CC Gemini IX, Houston standing by.

23:03:12 C Roger. This is Gemini IX. We're making a 3-foot-per-second at 59:00.

23:03:25 CC IX, Houston. Say again the time, please.

23:03:31 C Roger. 22:59:00.

23:03:56 CC Gemini IX, Houston. Copied the Separation Maneuver at 22:59:00. Is that affirmative?

23:04:06 C That is affirmative.

CONFIDENTIAL

# CONFIDENTIAL

137

23:04:09 CC Roger. Was that a 3-foot-per-second Retrograde?

23:04:13 C Yes.

23:04:15 CC Roger.

23:04:17 C This is Gemini IX. Say again.

23:04:24 CC Gemini IX, Houston. Understand that was a 3-foot-per-second Retrograde Burn. Is that affirmative?

23:04:31 C That is affirmative.

23:04:33 CC Roger, Tom. Anticipate when we come across the States in the next pass that we'll do an Accelerometer Bias Check all the way across the States. We will take a good look at it. So you can prepare for it even before you get there and you can let it run all the way across.

23:04:53 C Roger. Will do.

23:05:06 C ... Re-Rendezvous for 24-hour period between the retros.

23:05:20 CC Gemini IX, Houston. We're having a little trouble reading you. Say again, please.

## CARNARVON

23:18:02 CC Gemini IX, Carnarvon CAP COM. We're standing by.

23:18:05 C Roger, Carnarvon. We're just getting squared away here in the cockpit.

23:18:10 CC Roger.

23:18:12 C We are through with all our Bias Check across the States and our computer's all set up.

23:18:16 CC Okay.

23:18:29 CC On that 3-foot-per-second burn, which thrusters did you use?

# CONFIDENTIAL

## CONFIDENTIAL

23:18:34 C Roger. We used the forward-firing Numbers 11 and 12.

23:18:38 CC Roger. We copy.

## GUAYMAS

23:56:07 CC Gemini IX, Houston.

23:56:09 C Houston, Gemini IX.

23:56:11 CC Roger, IX. We're standing by for Accelerometer Bias Check all the way across.

23:56:16 C Roger. I have Address 25, 26 and 27 all zero and pushing START COMP.

23:56:22 CC Roger. Just let it go and no thrusting and we'll watch it. I have a Flight Plan update for you.

23:56:29 C Roger.

23:56:32 CC Roger. Node: Ascending Node; Rev 15; 158.6 west. And your Flight Plan update for the next couple of revolutions - we're going to give you an eat period starting right now, at your convenience, and give you a couple of revolutions of rest and we'll pick you up at the end of Rev 17, beginning Rev 18 over the States again.

23:57:08 CC Roger. Sounds good. What time will that be?

23:57:13 CC Roger. We'll pick you at - Hawaii time at the end of Rev 17 is 26:52. It will be approximately 27:10, 27:15.

23:57:27 C Sounds real good. We want to get a little snooze here and eat some for awhile.

23:57:33 CC Okay. While we're watching this Bias Check we'd also like to brief you on crossfeeds. We want to open the crossfeed now and see if this will balance those tanks; we can close the crossfeed at the beginning of EVA in the morning and we will not have to open it up again. So if we do it now, we'll be all set for the rest of the flight.

CONFIDENTIAL

# CONFIDENTIAL

139

23:58:03 C Roger. You want to go ahead and open it at this time.

23:58:04 CC Well, I'll just go ahead and read the procedures to you. Quantity Read switch to FUEL CELL O<sub>2</sub>.

23:58:11 C Roger. FUEL CELL O<sub>2</sub>.

23:58:14 CC Okay. G and R Control Bus ON switch to EXPERIMENT position.

23:58:20 C Roger. Bus ON to EXPERIMENT position.

23:58:22 CC Crossfeed switch OPEN.

23:58:26 C Roger. Crossfeed switch coming OPEN. Then we are to standby.

23:58:34 CC Okay. Understand Pyro Fire to Agena Control, Bus Arm switch to SAFE.

23:58:39 C Switch to SAFE.

23:58:42 CC Fuel Cell O<sub>2</sub> Heater, OFF.

23:58:46 C Fuel Cell O<sub>2</sub> Heater, OFF.

23:58:48 CC Quantity Read switch to ECS O<sub>2</sub> for 20 seconds.

23:58:52 C Roger. ECS O<sub>2</sub>.

23:59:30 CC IX, Houston. Quantity Read switch FUEL CELL H<sub>2</sub>.

23:59:38 C FUEL CELL H<sub>2</sub>.

23:59:39 CC Roger. You can leave it there for 20 seconds and then OFF.

24:00:11 C H<sub>2</sub> coming OFF.

24:00:17 CC Roger. Cryo gage switched OFF.

24:00:19 C Roger.

24:00:23 CC Tom, that's all I have right now for you and we'll watch you going across. You can relax for a while.

# CONFIDENTIAL



## CONFIDENTIAL

24:00:29 C All the ... were done on that last rendezvous. I think we learned a whole lot about rendezvous from those last two and also from the first one.

24:00:37 CC Yes, I think we all did on those.

24:00:41 C That was quite a chore. I'll clue you, on that last one, everything was going real good. Hope we came out okay on it.

24:00:48 CC Okay. Real fine. Real glad it happened that way.

24:00:54 C But you talk about being busy as a left-handed paper-hanger trying to go optically and also IFR, that was really a chore!

24:01:00 CC Yes, well that's nothing new, is it?

24:01:03 C No, just like flying the old ...

24:01:09 CC Well, it looked like a pretty good show from down here.

24:01:12 C Thank you.

24:01:15 C Yes. We used our Backup Initiate, which was real close to what the Ground's was. The Closed-Loop was off a little. We could see this from the plots.

24:01:24 CC Understand.

24:01:26 C This being Closed-Loop would have thrown us in the wrong way. Our Delta, Delta-R shows exactly what we had instantly, and the ground solution was good, and so was our on-board backup. We kept a Closed-Loop and used the modified first Midcourse. We took the backup - the Closed-Loop for the final Midcourse.

24:01:46 CC Fine. Sounds good. At least we know how to do them now, don't we?

24:01:49 C Yes.

24:02:05 CC IX, Houston.

CONFIDENTIAL

# CONFIDENTIAL

141

24:02:06 C Go ahead.

24:02:08 CC Tom, just an overall look here. What we're looking at this afternoon, after you have a couple of revolutions to rest, just pick up some of your experiments, D-14 and S-11's. We can update those later for you, and we'll update them in REAL-TIME for you to do them after your rest period. We're trying to get the EVA tomorrow morning as late as possible, still maintaining stateside coverage so we can give you a good 10-hour rest period to-night before EVA Prep.

24:02:44 C That sounds real good. Give us a good accurate Propellant Quantity from the ground readout. I'm showing about 11 percent here.

24:02:51 CC Stand by.

24:04:36 CC Gemini IX, Houston.

24:04:38 C Go ahead.

24:04:39 CC Roger. Your On-Board Gage reading agrees with our reading within 1 percent, which means you have approximately 50 pounds of fuel remaining.

24:04:49 C Roger.

24:12:57 CC Gemini IX, Houston.

24:12:59 C Houston, IX. Go.

24:13:00 CC Roger. We're about to have LOS in a minute and a half or so and we'll be looking at you while you're taking a little rest here for awhile.

24:13:10 C Okay. Do you want the computer OFF, Dick?

24:13:12 CC Stand by

24:13:22 CC IX, Houston. Roger. You can shut down the computer on normal procedures.

24:13:29 C We'll leave the Platform ON.

24:13:33 CC Roger. Understand. Tell Gene I'm sorry about his

# CONFIDENTIAL

## CONFIDENTIAL

Cubs last night, but we'll try again tonight.

24:13:39 C Okay. You know how the Cubs are.

24:13:43 P I'll be a winner tomorrow anyway, no matter how you look at it, Dick.

24:13:46 CC I'm sure you will.

24:13:50 P Yes, try a little harder. I lost 2 out of 2 yesterday.

24:13:54 CC Say again.

24:14:01 P Yes, the Astros and the Cubs.

24:14:04 CC Well, I lost one of them with you, so that's pretty close. Chris said the Yankees won.

24:14:14 P Say again.

24:14:16 CC The Yankees won yesterday.

24:14:18 P Thanks a lot. Who are they?

24:14:22 CC You not only got the wrong teams, you got the wrong league.

24:14:26 P Yankee who?

24:14:29 CC Good night.

## CARNARVON

26:31:49 CC Gemini IX, Carnarvon CAP COM.

26:31:59 CC Gemini IX, Carnarvon CAP COM.

26:32:02 P Carnarvon, this is Gemini IX. Go.

26:32:05 CC Okay. Stand by to copy a Flight Plan update.

26:32:09 P Okay. Give me a minute.

26:32:12 CC Roger.

CONFIDENTIAL

# CONFIDENTIAL

143

26:32:51 P Okay, Carnarvon. Fire away.

26:32:54 CC Roger. The title is D-14, that's Delta-14: Time, 26:52:34; Mode Number, Alpha Romeo; Remarks, extend antenna. The second item, D-14: Time, 27:16:33; Mode Number, Alpha Romeo. For third item, D-14: Time, 28:28:25; Mode Number, Alpha Lima. That's all.

26:34:02 P Okay. We've got three D-14's: one at 26:52:34, Alpha Romeo; 26:16:33, Alpha Romeo.

26:34:17 CC Negative.

26:34:18 P 29:28:25, Alpha Lima.

26:34:22 CC Negative.

26:34:25 CC The third D-14: 28:28:25, Alpha Lima.

26:34:31 P Roger. I have it down as 28:28:25, Alpha Lima.

26:34:37 CC And the second one is 27:16:33.

26:34:43 P Okay. Gemini IX calling CAP COM.

26:34:47 CC Go ahead. Carnarvon.

26:34:49 CC The second D-14 is 27:16:33.

26:34:54 P Roger. I've got it 27:16:33.

26:34:58 CC Roger. Alpha Romeo.

26:35:01 P Got it.

26:35:06 C Thanks for the rest, it sure helps.

26:35:09 CC You're welcome.

26:37:03 CC Gemini IX, Carnarvon. 1 minute to LOS.

26:37:06 C Roger, Carnarvon. We're Alining the Platform so we can give ... away.

26:37:11 CC Roger.

# CONFIDENTIAL

## CONFIDENTIAL

## HAWAII

26:57:10 CC Gemini IX, Hawaii.

26:57:12 CC All systems are GO on the ground and we're standing by.

26:57:15 C Roger. We're in the middle of D-14.

26:57:17 CC Roger.

26:57:51 C Hawaii, Gemini IX.

26:57:53 CC Go ahead.

26:57:55 C When I go to FUEL CELL H<sub>2</sub>, Quantity, I get the zero.

26:58:01 CC Stand by.

26:58:18 CC Okay. We're getting the same readout on the ground as that. Our pressure reading is 250, which is normal.

26:58:29 P Understand you're getting a zero quantity reading on the ground but a normal pressure reading.

26:58:32 CC That's affirm.

26:58:34 P Okay. Would you - keep a good look on it.

26:58:37 CC Sure will. Why don't you leave it in that position until you get across the States?

26:58:40 P Okay.

## CALIFORNIA

27:05:12 CC Gemini IX, Houston.

27:05:14 C Houston, Gemini IX.

27:05:16 CC Roger. Reading you loud and clear. Understand you want to update your Accelerometer Bias. You

CONFIDENTIAL

# CONFIDENTIAL

145

can go PRELAUNCH in the computer anytime.

27:05:30 C PRELAUNCH. And did Hawaii advise you about our Quantity reading on hydrogen?

27:05:35 CC Roger. We're looking at it down here. The pressure looks good - we're also getting a zero reading and we'll look at that over Texas with a calibration test.

27:05:45 C Okay.

27:05:47 CC I've got a continuous Flight Plan update for you when you're ready to copy.

27:05:55 P Go ahead, Neil. Ready to copy.

27:05:58 CC Roger. Over the RKV at 29:05 we'll give you a PLA update.

27:06:07 CC S-11 at 29:16:27; Sequence Number 01.

27:06:21 CC S-11: 29:49:02; Sequence 03.

27:06:34 CC D-14: 30:04:25; Mode, Alpha Lima.

27:06:46 CC S-11: 20:46:45; Sequence 02. S-11: 31:19:20; Sequence 03.

27:07:05 CC D-14: 31:39:57; Mode, Alpha Lima. S-11: 32:17:04; Sequence 01. S-11: 32:49:39; Sequence 03. D-14: 33:15:34; Alpha Romeo. Over.

27:07:47 P Roger. Gemini IX. Had a little pencil trouble on the first three. Would you repeat those three?

27:07:52 CC Roger. S-11: 29:16:27, Sequence 01. S-11: 29:49:02; Sequence 03. D-14: 30:04:25, Alpha Lima. Over.

27:08:19 P Okay. We've got them all, Houston.

27:08:21 CC Roger.

27:08:25 P And the fuel cells up here are looking real good. No indication other than the Quantity reading zero percent.

# CONFIDENTIAL

## CONFIDENTIAL

27:08:31 CC Roger. Understand, the Quantity. The pressure is looking good down here. We'll catch this over Texas in a few seconds.

## GUAYMAS

27:10:19 P Houston, Gemini IX.

27:10:21 CC Gemini IX, Houston. Go.

27:10:23 P Roger. Just for information - my main batteries read, in order: 21, 24, 22 and 23 both respectively.

27:10:37 CC This is Houston. Roger. Copied.

27:11:02 CC Gemini IX, Houston.

27:11:04 P Go, Houston.

27:11:06 CC Roger. Is Quantity Read switch FUEL CELL H<sub>2</sub>?

27:11:09 P It's FUEL CELL H<sub>2</sub> at this time.

27:11:11 CC Roger. Calibrate Number 1 for 30 seconds.

27:11:14 P Operate Number 1 for 30 seconds.

27:11:22 P MARK.

27:11:24 CC Roger.

27:11:50 P MARK.

27:11:51 P 30 seconds.

27:11:52 CC Roger. Calibrate Number 2 for 30 seconds.

27:11:59 P Roger.

27:12:02 CC Roger.

27:12:30 P MARK.

27:12:31 P 30 seconds.

CONFIDENTIAL

# CONFIDENTIAL

147

27:12:32 CC Roger. Understand 30-second MARK.

27:12:40 P Houston, let us know when we can have our computer back. We've got a D-14 coming up.

27:12:44 CC Roger. We're leaving PRELAUNCH. We're sending the Accelerometer Bias at this time.

27:12:54 P Roger. Received your update.

27:12:58 CC Roger. Let us look at it a minute.

27:13:01 P Okay. Was that 27:16:33 a good time for D-14?

27:13:06 CC Roger. 27:16:33.

27:13:09 P Okay.

27:13:34 CC Gemini IX, Houston.

27:13:36 P Go, Houston.

27:13:37 CC Roger. Your Accelerometer Bias update looks good. You can have your computer back.

27:13:41 P Thank you.

27:14:17 CC Gemini IX, Houston

27:14:19 P Go, Houston.

27:14:21 CC Roger. On your Fuel Cell H<sub>2</sub>, temperatures and pressures look real good and they are steady. We suspect we may have trouble with a sensor in the tank.

27:14:31 P Okay, Dick. Thanks a lot. Do you want us to turn Quantity Read switch to OFF?

27:14:37 CC That's affirmative.

27:14:41 P Okay. Quantity reads OFF at this time.

27:14:44 CC Roger. You may check it from time to time; it may come back in.

27:14:47 P Okay.

# CONFIDENTIAL



## CONFIDENTIAL

27:17:46 C Houston, Gemini IX. Is D-14 experiment being received?

27:17:51 CC Stand by. We received it in Hawaii. Let me check.

27:22:44 CC Gemini IX, Houston.

27:22:48 P Go ahead, Houston.

27:22:49 CC Roger, IX. We can't tell you how the data is being received at Antigua till after the pass. We'll let you know, though, and we'll have a fuel cell purge at Ascension at approximately 27:33:00. We'll purge Section 2 first. Over.

27:23:10 P Roger. Understand. Fuel cell purge at 27:33:00, Section 2 first - I've been alternating these sections, by the way, on the purges.

27:23:18 CC Roger. Understand.

27:23:21 P And I see by that last experiment update you're watching out for your favorite 11 group.

27:23:26 CC Yes sir. Lots of those.

CC Gemini IX, Houston.

P Go ahead, Houston.

CC Roger. We're thirty seconds to LOS and we did get good data at Antigua on D-14.

P Say you did get good data?

CC That's affirmative.

P Good.

27:33:20 CC Gemini IX, Houston. We're standing by for your fuel cell purge.

27:36:22 CC Gemini IX, Houston.

27:36:24 C Houston. Go.

CONFIDENTIAL

# CONFIDENTIAL

149

27:36:26 CC Roger, Tom. How's the fuel cell purge looking?  
27:36:29 C Say again.  
27:36:31 CC How is the fuel cell purge going?  
27:36:34 C Great!  
27:36:38 CC Roger. Understand.

## TANANARIVE

27:52:24 CC Gemini IX, Houston.  
27:52:28 C Gemini IX. Go.  
27:52:30 CC Roger. Tom. We're just standing by on this pass. We have nothing for you.  
27:52:32 C We're getting ready to do the D-14 over Hawaii.  
27:52:36 CC Roger. Understand.

## CARNARVON

28:05:41 CC Gemini IX, Carnarvon CAP COM. We have nothing for you this pass. We'll be standing by.  
28:05:47 C Roger. Carnarvon.  
28:06:03 CC We do have one question for you, Tom.  
28:06:05 C Shoot.  
28:06:06 CC The local folks down here are wondering if you had a chance to see much of Australia?  
28:06:11 C No. Not really. It's been pretty much looking at other things - the ATDA on the rendezvous and it's been kind of cloudy, too.  
28:06:19 CC Roger.

# CONFIDENTIAL

## CONFIDENTIAL

28:06:24 C You had a few thunderstorms around here; we could tell that.

28:06:26 CC Yes. Tonight was the first time we've had rain in about nine months.

28:06:30 C Yes. We could see the lightning down there.

28:06:35 P Say Bill, how did they get you off your favorite boat and into Australia?

28:06:37 CC Well, I used to put you guys to bed all the time, so now they let me wake you up.

28:06:47 C Sorry about that 2-week delay.

28:06:52 CC Yes. It's pretty rough down here.

28:10:51 CC Gemini IX, Carnarvon. We've one minute to LOS.

28:10:55 C Gemini IX.

28:10:57 CC We'll see you tomorrow.

28:10:59 C Roger.

## HAWAII

28:33:36 CC Gemini IX, Hawaii. We're receiving your D-14 data and it looks real good.

28:33:40 C Gemini IX. Roger. Thank you.

28:38:39 CC Gemini IX, Hawaii. We're 30 seconds to LOS and standing by.

28:38:43 C Gemini IX.

28:40:25 CC Gemini IX, Houston.

28:40:27 C Houston, Gemini IX.

28:40:29 CC Roger, Tom. Looks like we have another good pass at Hawaii for D-14.

CONFIDENTIAL

# CONFIDENTIAL

151

28:40:34 C Roger.

28:40:36 CC I have a sequence change to one of your S-11's when you're ready to copy.

28:40:40 C Okay. Stand by.

28:40:46 C Go.

28:40:48 CC Roger. The S-11 at 30:46:45: make the Sequence 01. Over.

28:40:58 C Roger. Got it.

28:41:02 CC Okay. We've been looking at your water down here a little bit. And ECOM tells me that we are losing a little bit of nitrogen out of the gas pressure of the Fuel Cell Regulation System. There is not a problem. Surgeon said you can stand to drink a little more of it. You might start tapping it a little bit if you'd like.

28:41:25 C Okay. We thought we did a pretty good job drinking on it. We'll go ahead and concentrate on drinking.

28:41:32 CC Okay. We'll watch here. I think if you take a little over a long period of time it would be the best way to do it.

28:41:38 C Roger.

28:41:41 CC And I've got a G and C status here for you if you're interested in all that. We've got down here - it looks like as far as the OAMS are concerned - fuel remaining is 48 pounds, oxidizer remaining is about 78. On-board gage should read about 11 percent and usable fuel gives us about 82 pounds. This is plenty of OAMS for Attitude Control for the rest of the flight plan.

28:42:05 C Real good.

28:42:08 CC On the computer, it seems to us down here that it's working normally at this time. Accelerometer Bias update was good. It's almost perfect at this time. That START COMP problem we had after the

# CONFIDENTIAL

## CONFIDENTIAL

first rendezvous - during the first rendezvous, has not reappeared and we think that problem may have been either in the START COMP button or in the Electronic Latch Internal of the computer.

28:42:35 C Okay. Roger. It hasn't shown up since the first day.

28:42:40 CC Okay. We do have a procedure for you when you load Module 5. We'll play that just at 25, 26 and 27 and we think we may be able to correct it in case it shows up, but we'll brief you on this when we load Module 4.

28:42:56 C Roger. Module 4. I thought you said 5 at first.

28:43:00 CC I think I did but I meant 4.

28:43:02 C Roger.

28:43:04 CC Okay. All other G and C systems look real good. Temperatures, pressures and voltages are all real fine.

28:43:10 C Okay, Dick. It's still warm here if we do any activity. So far we're running both suit fans.

28:43:16 CC Okay. Understand. As far as the ECON status is concerned, PCM tape recorder has now functioned in the Playback mode. What we'll do with that thing, we'll just leave it; looks like it's the beginning of the tape. We'll leave it off until just prior to EVA tomorrow morning. Hope that we may be able to get some AMU data on it.

28:43:38 C Roger. Real fine. Thank you.

28:43:42 CC And your Fuel Cell H<sub>2</sub> Quantity tape sensor looks like it is gone. Everything else concerning that looks okay. We're going to calculate hydrogen quantity from amp hours and keep you posted on that one.

28:43:57 C Okay. The last we saw of it, Dick, we were real good. We were way up over 87 percent this morning.

28:44:03 CC Okay. It doesn't look to us like there are any

CONFIDENTIAL

leaks. The system integrity looks good and we really think it is a sensor in that case. Looks like your stacks in the section are storing load real well up there.

28:44:17 C Right.

28:44:18 CC Okay. And coolant loops - - both of them look real good and I understand you are on both A pumps at this time to keep a little cool.

28:44:25 C That's affirmative.

28:44:27 CC Okay. That's really all that we have here at this time. We'll be standing by.

28:44:31 C Roger.

## GUAYMAS

28:45:03 CC IX, Houston.

28:45:05 C Houston, IX.

28:45:07 CC Roger. How about putting your Quantity Read switch to ECS O<sub>2</sub>.

28:45:13 C ... Go. We have a reading of about 65 - 64 1/2 percent.

28:45:19 CC Roger. Understand you're reading 64-1/2 percent.

28:45:52 CC Gemini IX, Houston. Go to FUEL CELL O<sub>2</sub>.

28:45:57 C FUEL CELL O<sub>2</sub>.

28:46:33 CC Gemini IX, Houston. Go to FUEL CELL HYDROGEN.

28:46:39 C FUEL CELL HYDROGEN.

28:47:03 CC Gemini IX, Houston. You can go to Quantity Read, OFF. Everything looks good down here.

28:47:09 C Quantity Read to OFF. Could you give us the latest GET hack?

## CONFIDENTIAL

28:47:14 CC Roger. I'll give you a hack at 28:47:20.

28:47:20 CC MARK. 20.

28:47:24 P Roger. We're right on.

28:47:26 CC Okay. Have a Flight Plan update for you.

28:47:31 P Go.

28:47:37 P Go ahead, Dick.

28:47:39 CC Roger. At CSQ at 32:59:00, we'll expect a crew status report; you'll have a fuel cell purge, and a Cryo Quantity readout again.

28:48:01 C When's this, Dick?

28:48:03 CC At CSQ, at 32:59:00.

28:48:08 C Roger. 32:59:00.

28:48:11 CC Roger. Than at 33:30:00 you power-down; at 33:30 to 34:30 have an eat period and from 34:30 to 44:30 sleep period. Over.

28:48:35 C Roger. Power-down at 32:59:00 and ... yes, we've got all the other ones. Sleep period started at 44 - from 34:30 to 44:30.

28:48:50 CC Roger. And that power-down was at 33:30, and your crew status at CSQ at 32:59.

28:48:57 C Roger.

28:48:58 CC Okay.

28:49:29 C Houston, Gemini IX.

28:49:32 CC IX, Houston. Go.

28:49:34 C Roger. We'd like to stay powered-up for about 15 minutes after the initial power-down and complete D-14. We could do a better job with everything up.

28:49:53 CC Roger. Understand the D-14 at 33:15:34.

CONFIDENTIAL

# CONFIDENTIAL

155

28:50:01 C Roger.

28:50:02 CC Roger. I agree with that.

28:50:17 CC IX, Houston.

28:50:19 C Go ahead.

28:50:22 CC Roger, Tom. We didn't have you powering down until 33:30 which is 15 minutes after your last D-14.

28:50:29 C Okay. Right. We've got it.

28:50:31 CC Okay.

29:00:03 CC Gemini IX, Houston. We're one minute LOS Antigua.

## ROSE KNOT VICTOR

29:04:28 CC Gemini IX, RKV CAP COM.

29:04:31 C RKV, IX here. GO.

29:04:33 CC Roger. Got a Flight Plan - I mean a PLA update for you.

29:04:52 C Roger. RKV. Go ahead.

29:04:53 CC Roger. Area 21-3: GET RC, 32:37:55; RET LOOK, 21 plus 06; RET RB 27:11; weather marginal. Area 22-3: 34:13:20; 21 plus 17; 28 plus 16; weather marginal. Area 23-3: 35:48:65; 21 plus 24; 27 plus 37; weather marginal. Area 22-4 Bravo: 37:42:12; 21 plus 21; 27 plus 21; weather good. Area 25-Bravo: 29:17:54; 21 plus 26; 27 plus 25; weather good. Area 26-2: 39:56:30; 20 plus 50; 26 plus 48; weather good. Area 27-2 Charlie: 41:32:04; 20 plus 52; 27 plus 04; weather good. Area 28-1 Charlie: 43:00:42; 20 plus 50; 26 plus 57; weather good. Bank angle for all areas: roll right 95. No Sep Maneuver for any area.

29:08:11 C What I missed was the GET RC of Area 22-3.

# CONFIDENTIAL



## CONFIDENTIAL

29:08:14 CC Say again.

29:08:16 C Roger. The GET RC of Area 22-3.

29:08:19 CC Roger. That is 34:13:20.

29:08:26 C Roger. Out.

29:08:32 CC Roger. We have nothing further for you, Gemini IX. You're looking good here on the ground. We'll be standing by.

29:10:51 C Record switch is ON.

29:10:59 C ... 29:16:27. Now, what were we going to ...

29:11:19 C Where's the horizon?

29:11:21 P ...

29:11:23 C ...

29:11:33 C Got the airglow - right below the moon.

29:11:43 CC Gemini IX, RKV. Got about one minute to LOS.

29:11:47 C Roger. We have sunrise over here ...

29:11:53 CC Would you say again, please?

29:11:56 C Roger. We're setting up for S-11.

29:11:58 CC Roger.

29:12:52 C ... Gene. She's yours; I don't know what ...

29:12:59 P Oh, the cockpit position ... just I thought ...

29:13:23 C ... moon reflecting down.

HOUSTON

29:13:27 CC Gemini IX, Houston with a COM check through Ascension.

CONFIDENTIAL

# CONFIDENTIAL

157

29:13:33 C Roger, Houston. Gemini IX.

29:13:37 C Read you five-by-five with a lot of background noise. We're starting S-11.

29:13:46 CC Gemini IX, Houston. Roger. Read you loud and clear.

29:13:52 C Roger. This should be interesting, we have a full moon right over the horizon.

29:13:57 CC Roger. I understand. Full moon on the horizon. We'll be watching you.

29:14:03 P Notice how much I yaw, and watch this go off about 30 degrees ...

29:14:12 C I've got sunshine coming back. Sunset still hitting me over here.

29:14:23 C 30 degrees. Let me know when you want to stop the rates.

29:14:29 P Boy, the cockpit position is so terrible! I can't get - I can't get down any further.

29:14:34 P Going to be about - -

29:14:39 C How far?

29:14:41 P - - almost.

29:14:43 C ... around from here.

29:14:45 P ... we're going ... here.

29:14:49 C We're over at 300 ... You want me to stop the yaw?

29:14:52 C You want me to stop the yaw for you?

29:14:55 P Yes. Stop the yaw.

29:15:13 P Okay, Tom.

29:15:15 P Hold our yaw ...

# CONFIDENTIAL

## CONFIDENTIAL

29:15:30 C Okay. Use the filter to start with.

29:15:44 P I guess this is going to be a long process. Boy, oh boy!

29:15:53 P Thirty ...

29:16:07 P MARK.

29:16:14 P Hold the rate right there.

29:16:16 C Okay.

29:16:23 P Okay. I'll fix your ... now okay, pal.

29:16:26 C Ready.

29:16:27 P Stand by.

29:16:28 P Mark it.

29:16:29 C Ready. Go.

29:16:30 P Stand by.

29:16:31 C Hold it. Go.

29:16:45 C 15 seconds.

29:16:50 C Mark it.

29:16:51 C 20.

29:17:06 C Okay.

29:17:08 P Still one clip left.

29:17:11 P Okay. Stand by.

29:17:13 P Mark it.

29:17:15 C Go for 5.

29:17:20 C MARK.

29:17:21 P Stand by - -

CONFIDENTIAL

# CONFIDENTIAL

159

29:17:22 C 2

29:17:24 P - - one clip left.

29:17:28 C MARK. 1001, 1002.

29:17:31 C MARK.

29:17:32 C Okay. Now the sun is still shining out on the left.

29:17:36 P Well, go ahead and yaw over there.

29:17:39 C That would ... we'll take a good look at 240 degrees. I'll tell you what - you can pitch down about 25 degrees.

29:17:50 P Boy, this cockpit position is terrible! Back her around 90 degrees, Tom.

29:18:07 C Sun's going down pretty rapidly. We'll go around to 240.

29:18:13 P I should be able to take a picture.

29:19:14 C We're getting close to it.

29:19:20 P Okay. Roll left a little bit.

29:19:35 P ...

29:19:44 C Seems to be the reverse process, right?

29:19:46 P ... I better pull it around ...

29:19:52 C I have damped the rates just a little.

29:19:59 P Pitch down a little bit here.

29:20:09 C See anything out the window, Gene?

29:20:16 P Okay. Stand by.

29:20:19 C Yes.

29:20:20 P MARK.

# CONFIDENTIAL

## CONFIDENTIAL

29:20:22 C 1001, 1002.

20:20:23 P Stop.

20:20:27 C Okay. Ready for the next one.

29:20:28 P Yes.

29:20:30 C Stand by.

29:20:32 P MARK.

29:20:35 C 1, 2, 3, 4,

29:20:39 C MARK.

29:20:40 C Okay. 20 seconds ... filter.

29:21:02 P Down a little bit.

29:21:09 P Little more.

29:21:33 P ...

29:21:35 C Okay.

29:21:40 C Get the roll up.

29:21:43 C Ready.

29:21:44 P Yes.

29:21:45 C MARK.

29:22:03 C Stand by.

29:22:06 C MARK.

29:22:09 P Okay. Let's go over the left.

29:22:10 C Left again?

29:22:11 P Okay. Yes, left again.

29:22:14 C We go from 240 back to 150.

29:22:24 P 150?

CONFIDENTIAL

# CONFIDENTIAL

161

29:22:26 C 150.

29:22:37 C It's kind of a dirty brown the way that thing looks out there.

29:22:40 P Yes.

29:22:42 C White and yellow on top.

29:23:14 C Do you have to be done at any particular time? You know, we can take our time going around.

29:33:17 P No. We have to be there for sunrise ...

29:23:21 C Back where we started?

29:23:23 P ... have to be there for one or ... No, that's right ...

29:24:11 C ... one ...

29:23:16 P ... got to push down.

29:24:22 C ... roll right ...

29:24:44 P ... roll right.

29:25:19 P ... Roll right.

29:25:23 C Still ...

29:25:25 P Yes ... golly, I can't move down here.

29:25:29 P Pitch down and ... roll right.

29:25:40 C All right. Stop.

29:25:42 P ... stop.

29:25:44 C 20 seconds. Stand by.

29:25:45 C MARK.

29:26:03 C Stand by.

29:26:06 C MARK.

29:26:08 P Oh Boy ...

# CONFIDENTIAL

## CONFIDENTIAL

29:26:19 P ... okay on this side.

29:26:21 C 5 seconds.

29:26:22 P ... I can't stay down here. This is just ridiculous.

29:26:32 C It should be more ... than the way it is.

29:26:35 P I can't get my legs in under.

29:26:39 C ...

29:26:41 P ... Tom, I can't get - - Boy, talk about a work load trying to get under this thing!

29:27:13 CC Gemini IX, Houston.

29:27:16 C Roger. We're going through a little bit of a gymnastic here with S-11.

29:27:20 CC Roger. Understand.

29:27:21 CC Okay.

29:27:29 P Boy, think I'd rather patch this darn box ...

29:27:30 P Roll left ... yaw right.

29:27:40 C ...

29:27:42 P I can't get down here ...

29:27:45 P Roll left.

29:27:49 P Can't stay down there ...

29:28:06 P Roll left.

29:28:30 P Okay. Stand by.

29:28:32 C Okay. I'll get the rate scaling. Rate check yaw for 5 seconds.

29:28:40 P Okay.

29:28:41 C Ready.

CONFIDENTIAL

29:28:42 C MARK.

29:28:47 C Stand by.

29:28:50 C MARK.

29:28:52 C 2 seconds. Stand by.

29:28:54 C MARK.

29:28:55 C 1001, 1002.

29:28:57 C MARK.

29:29:00 P Whew! That's almost ...

29:29:08 C Going to 0 ... It's a real lock, it had been Alined with the ... on the Spacecraft ... data, beautiful data ...

29:29:21 P I just checked in on Ground. You know where I am? I'm down sitting on that attitude controller, trying to do this and it just doesn't work ... operation.

29:30:02 P I want to go to 40 degrees - 60 degrees.

29:30:06 C 60 degrees.

29:30:08 P Right. 50 or 60?

29:30:15 C Yes. This experiment takes much more fuel than I think people orginally thought, because of the attitude the camera's mounted in ... what we have to do to get ... Okay, coming up ...

29:30:27 P This a 2-second exposure. Our pitch is down and roll is good.

29:30:51 P By the way ... our thruster ...

29:31:13 C How are we doing on pitch?

29:31:14 P We're still coming down. Give it a roll right. Another one.

29:31:42 P Roll right.



## CONFIDENTIAL

29:32:50 C ...

29:32:57 C Ready.

29:33:02 C MARK.

29:33:04 C MARK.

29:33:06 C ...

29:33:10 C Ready.

29:33:18 C ...

29:33:48 C ...

29:34:04 C MARK.

29:34:09 C Stand by.

29:34:10 C MARK.

29:34:15 C ... That completes the sequence.

29:34:45 C Stand by.

29:34:46 C MARK.

29:35:05 C Stand by.

29:35:06 C MARK.

29:35:33 P ... 09, 29 seconds.

29:37:06 C S-11, Sequence 03, sunrise data at a GET of 29:49:02.

29:37:09 C ... About.

CONFIDENTIAL

# CONFIDENTIAL

165

## COASTAL SENTRY QUEBEC

29:49:04 CC Gemini IX, CSQ CAP COM.

29:49:06 C Stand by.

29:49:07 C Okay. Stand by.

29:49:09 C MARK.

29:49:14 C Stand by.

29:49:19 C MARK.

29:49:23 C Stand by.

29:49:24 C MARK.

29:49:28 C Stand by.

29:49:29 C MARK.

29:49:34 C CSQ, Gemini IX. Go ahead. We were in the middle of the S-11 experiment.

29:49:37 CC Roger. My mistake for contacting you. We show you GO on the ground. Everything looks real fine from here. Standing by.

29:49:44 C We just finished S-11.

29:49:47 CC Roger.

29:49:49 C Ready for D-14.

29:49:50 CC Roger. Understand.

29:49:52 C D-14 is 30:04, right. Right?

29:50:52 C Left. Yaw to the left.

30:04:27 C ... time?

30:04:29 P 30:04:25 ...

30:04:30 P Mark it. It's ON.

# CONFIDENTIAL

## CONFIDENTIAL

30:04:31 C Attitude is ON.

## HAWAII

30:09:40 CC Gemini IX, Hawaii. We're receiving your D-14 data and it looks real good.

30:09:45 C Gemini IX. Roger.

## CALIFORNIA

30:16:32 CC Gemini IX, Houston.

30:16:33 C Houston, Gemini IX.

30:16:35 CC Roger, Tom. We are standing by. We don't have anything for you this pass, except one question. If you can recall when you closed the S-12 door, do you have any idea how long that door was running before it closed? Over.

30:16:52 C We couldn't hear it operate.

30:16:55 CC Okay. Fine, thank you.

30:16:56 C No, we couldn't hear it operate, either open or closed.

30:17:01 P ... it's not locked.

30:17:03 P ... Did he say that?

30:17:05 C Yes. It just now locked. We'll get more data on it tonight.

30:17:08 CC All right. I have another question on opening that up again, if it took longer than 30 seconds to close. I doubt if you could estimate that.

30:17:18 C When did you close the door?

30:17:24 P Just left it closed; just put it closed and left it.

CONFIDENTIAL

# CONFIDENTIAL

167

30:17:27 CC Roger.

30:17:28 C Next one is what, one of yours?

30:17:29 P Yes. 30:46, Tom.

30:17:32 P Ol again. Same thing. One of yours and one of mine and one of yours.

30:17:38 C Put the ... around 30 degrees. It won't even go around to 360 when we come back.

30:17:41 P Okay.

30:17:47 C It looks like ... all kinds of cheese dropped down there, doesn't it?

30:17:49 P Boy! Sure does, doesn't it?

30:18:09 CC Gemini IX, Houston. I have a nodal update for you, if you are ready to copy.

30:18:14 C Nodal update? Okay. Stand by.

30:18:23 C Go ahead.

30:18:24 CC 29:46:20; Rev 19, 129.1 ... 45 hours, 33 minutes, right ascension.

30:18:43 P Say again longitude and right ascension.

30:18:45 CC Roger. Longitude 109.18; right ascension, 19 hours, 33 minutes.

30:18:49 P 17 or 19?

30:18:51 CC 19.

30:19:01 P Roger. We've got it. Thank you, Dick.

30:19:03 C What's the ... angle?

30:19:06 P 19:35, right ascension.

30:19:08 C What was the time for that dude?

30:19:10 P We should have an eraser up here.

# CONFIDENTIAL

## CONFIDENTIAL

30:19:12 P Had 21:46:40.

30:19:14 C 21 or 31:46?

30:19:18 C What was the time there?

30:19:21 P 21:46:40.

30:19:29 C Houston, Gemini IX.

30:19:30 P What revolution are we on?

30:19:32 CC This is Houston. Go.

30:19:33 C ... Rev 20.

30:19:34 P Okay.

30:19:36 P Say again the time on that nodal update.

30:19:41 CC Roger. Time, 29:46:00; Rev 19.

30:19:49 CC Okay. We've got it. 29:46:40.

30:19:55 CC 29:46:20.

30:20:13 P Where are we that there's no clouds around here?

30:20:19 C Somewhere over California.

30:21:24 C What did we yaw to?

30:21:49 P Ready?

30:21:51 C 20 seconds.

30:21:52 P Ready now?

30:21:54 C Stand by.

30:21:55 C MARK.

30:24:05 CC Gemini IX, Houston. One minute to LOS.

30:24:09 C Roger.

CONFIDENTIAL

# CONFIDENTIAL

169

## ROSE KNOT VICTOR

30:39:46 CC Gemini IX, RKV CAP COM. We have nothing for you  
this pass. We are standing by.

30:39:52 C RKV. Roger.

30:48:14 C Stand by.

30:48:15 C MARK.

30:48:32 C MARK.

30:48:41 C ... Now 5 seconds worth ... 5 seconds.

30:48:56 C ...

30:49:00 C Stand by.

30:49:01 C MARK.

30:49:05 C 3.4.

30:49:07 C MARK.

30:49:12 C ... 5.

30:49:13 C MARK.

30:49:17 C MARK.

30:52:41 C Stand by.

30:52:42 C MARK.

30:52:45 C Stand by.

30:52:46 C MARK.

30:52:51 C Ready for 5 seconds. Stand by.

30:52:53 C MARK.

30:52:55 C Stand by.

30:54:33 C MARK.

# CONFIDENTIAL

## CONFIDENTIAL

30:54:50 C Stand by.

30:54:53 C MARK.

30:54:56 P ... sun is bright.

30:55:04 C ...

30:55:13 C Stand by.

30:55:14 C MARK.

30:55:17 C Complete Sequence 2.

30:55:19 P Sequence 1, you mean.

30:55:21 C Sequence 1. Right. We'll go to Sequence 3 ...

31:05:04 C Hello, Carnarvon. Gemini IX.

31:05:06 CC ... this is Tananarive talking to someone ...

31:05:08 C Tananarive, Gemini IX.

31:05:42 CC Gemini IX, Tananarive.

31:05:46 C Roger. Your maintenance people are keying your transmitter quite a bit.

31:05:50 CC Roger. Understand.

31:05:52 CC Have a little circuit noise down here.

31:05:53 C Roger.

31:05:54 P Okay. What's the time on this other one, Tom?

31:19:24 C 31:19:40.

31:19:25 P We have lots of time to go.

31:19:26 C Okay.

31:20:04 P MARK. Transmitter's on.

31:20:05 C Okay ... zipper bags ...

CONFIDENTIAL

# CONFIDENTIAL

171

31:20:07 P Okay. That was after the first day, Tom. Those zipper bags for the ...

## COASTAL SENTRY QUEBEC

31:23:46 CC Gemini IX, CSQ CAP COM. You need not answer. We have nothing special for you at this time. We show your vehicle as GO. We are standing by.

31:23:58 C Gemini IX. Roger, CSQ.

CC Gemini IX. We have you GO and we are at LOS, we just received an answer.

## HAWAII

31:46:21 CC Gemini IX, Hawaii. We're receiving your D-14 data and all systems look good.

31:46:25 C Gemini IX. Roger.

31:46:28 C Hawaii, Gemini IX. Could you check with Houston and find out what their latest estimate of our hydrogen quantity is, please?

31:46:36 CC Roger. Will do.

31:46:51 CC Gemini IX, Hawaii.

31:46:52 C Go, Hawaii.

31:46:54 CC Their current figure is 78 percent.

31:46:57 C Roger.

31:49:51 CC Gemini IX, Hawaii. We have 1 minute to LOS and we're standing by.

31:49:55 C Roger.

# CONFIDENTIAL



## CONFIDENTIAL

## ROSE KNOT VICTOR

CC Gemini IX, RKV CAP COM. You need not acknowledge this transmission. We've got you GO on the ground and are standing by.

CC Gemini IX, RKV. We have about a minute to LOS. Will be standing by.

C Roger.

32:37:45 CC Gemini IX, Houston is standing by. We have nothing for you this pass.

32:37:51 C ...

## COASTAL SENTRY QUEBEC

33:00:34 CC Gemini IX, CSQ CAP COM. We have a valid temperature on the Command Pilot. Kindly disregard, at this time, the temperature. We're standing by for your food and water report and fuel cell purge, at your convenience.

33:00:50 C Roger. 128 ounces of water and four meals.

33:00:59 CC Roger. Could you break the water report down as Pilot and Command Pilot, please?

33:01:05 C Well, that's splitting it 50-50.

33:01:08 CC Roger. Understand.

33:01:32 CC Gemini IX, could you also give me a water gun count, please?

33:01:41 C Roger. 02444.

33:01:47 CC Roger. Copy 02444.

33:02:06 CC Roger, Gemini IX. We have a valid temperature on the Pilot at this time. You can remove the thermometer.

CONFIDENTIAL

# CONFIDENTIAL

173

33:05:43 CC Gemini IX, would you place your Quantity Read switch to ECS O<sub>2</sub>, please?

33:06:07 CC Quantity Read switch to FUEL CELL O<sub>2</sub>.

33:06:29 CC Quantity Read switch to FUEL CELL H<sub>2</sub>, please.

33:06:55 CC And place your Quantity Read switch to OFF and would you give me a report on your S-11?

33:07:04 P Roger. We received - completed all S-11 and updated the Flight Plan. We repeated all D-14's with the exception of the last one. Coming up at Hawaii.

33:07:14 CC Roger. We show you as GO and you're around 20 seconds - 30 seconds from our LOS.

## HAWAII

33:19:41 CC Gemini IX, Hawaii.

33:19:42 CC Gemini IX, Hawaii.

33:19:44 C Hawaii, Gemini IX.

33:19:46 CC Roger. If you have time during this D-14, I have a Flight Plan update for you.

33:19:52 C Okay. I can copy it in just a minute.

33:19:56 P Go ahead with the update.

33:19:58 CC S-12: 34:30, Sequence 01. S-12: 44:30; Sequence 02. 44:30 through 45:30: eat period; 45:30 through 49:30: EVA preparations.

33:20:59 P Roger, Hawaii. Gemini IX. S-12: 34:30; Sequence 01. S-12: 44:30; Sequence 02. 44:30 through 45:30: eat period. EVA preparation is 45:30 through 49:30.

33:21:22 CC That's affirmative. And if we get near our LOS, I'll be turning your Adapter C-Band OFF.

33:21:28 P Roger.

# CONFIDENTIAL

## CONFIDENTIAL

33:21:39 CC Roger. Houston would like for you to keep working on that water. They say you've got a pretty big day coming up tomorrow.

33:21:46 P Okay. Will do.

33:22:18 CC Gemini IX, Hawaii.

33:22:21 C Go ahead, Hawaii.

33:22:22 CC This will be about all the air-to-ground conversations we'll have with you for awhile and we won't be calling you any more for some time, unless something comes up we need you for.

33:22:32 P Okay. Thank you very much.

## HOUSTON

44:54:11 CC Gemini IX, Houston. Did you take any water at all?

44:54:16 C ... We've got a little problem with the water building up. What does your counter read?

44:54:22 C Stand by, Neil.

44:54:24 C 2472, 02472.

44:54:31 CC Okay. Well, we're going to have you - have you taken any water at all out this morning?

44:54:51 C We started drinking - just started drinking now.

44:55:02 CC Well, we're going to have to dump some water. Our suggestion here is to dump it through the water boiler. We have a procedure we're ready to give you when you're ready to copy.

44:55:17 C Okay.

44:55:32 CC What it amounts to is dumping about 2 pounds of water, which is 66 counts on the gun.

44:55:42 C Go ahead with the procedure, Neil.

CONFIDENTIAL

# CONFIDENTIAL

175

44:55:43 CC Okay. We want to put the Radiator to BYPASS now.

44:55:51 C Okay.

44:55:53 CC Okay. Then your Water valve and Condensate valve in NORMAL, which I expect is where they are.

44:56:03 C Roger. Both in NORMAL.

44:56:06 CC Okay. Then we'll want to squirt out, using the water gun, into the M5 receptacle and put the Waste valve in EVAP.

44:56:33 C Roger. Put the water gun to the M5 receptacle and put the Waste valve to EVAP.

44:56:38 CC Roger. Then put the Selector valve on the M5 collector to BYPASS and shoot 66 clicks of the water gun in there and see how much you bounce around inside the cabin.

44:57:14 CC Another thing we'd like to have you do, when you get a chance, is close the S-12 doors.

44:57:20 C We just closed them.

44:58:38 CC Gemini IX, Houston. We've got a Flight Plan update for you when you're ready to copy. I don't mean to get you too busy here, but let me know. We've got about 10 minutes yet before we lose contact.

44:58:54 C Okay.

44:59:04 CC Let us know when you start clicking the gun, too.

44:59:07 C Roger. We already started clicking the gun.

44:59:10 CC Roger. You're clicking it now?

44:59:11 C Roger.

44:59:12 CC Okay. I'm trying to watch your pressure down here.

44:59:37 C Okay, Neil. Ready to copy.

# CONFIDENTIAL

## CONFIDENTIAL

44:59:40 CC Okay. We have first a node for you. It's 44:48:09; Remarks: Rev 28, 121.7 west; right ascension, 19 hours 14 minutes; time of 45:11. At Canary is the crew status report, PLA update, fuel cell purge.

45:00:39 C Got it.

45:00:40 CC Okay. At 45:30: EVA preparation start.

45:00:53 C Okay.

45:00:54 CC At 46:28, we'll have a GO/NO-GO for 46-1.

45:01:07 C Roger. Good.

45:01:08 CC At 48:58: GO/NO-GO for depressurization.

45:01:23 C Roger.

45:01:24 CC And your sunrise time, Tom, is 49:26:34.

45:01:34 C Roger. 49:26:34: for sunrise and depressurization.

45:01:40 CC That's right.

45:02:08 CC Now if you can drink some more water or put some in some water bags there, why it'll probably help the margin we've got for the next 4 or 5 hours.

45:02:20 C Roger.

45:02:55 C We've done 25 clicks into the water boiler.

45:02:59 CC Roger.

45:03:00 C And I'm bringing the Spacecraft to a stabilized position, which should help eat it up.

45:03:07 CC Okay. You do have your Radiator in BYPASS, don't you?

45:03:10 C Affirmative.

45:03:11 CC Okay.

45:03:13 C And we added evaporate pressure right on top of

CONFIDENTIAL

# CONFIDENTIAL

177

evaporate ...

45:03:18 CC Okay. That's good.

45:04:40 CC Want to remind you here too, Tom, that over the Canaries in about 10 minutes - 6 to 10 minutes - they'll be giving you a PLA update. You might make sure you've got that right book out.

45:05:51 C And we still have the Evaporator Pressure valve OPEN, and I've got the heat to it.

45:05:57 CC Okay, Tom. We're expecting it. How many clicks are you up to?

45:06:03 C 39.

45:06:04 CC 39?

45:06:08 C Roger. 40 now.

45:06:09 CC Okay.

45:07:42 CC Okay. We're about to lose you here, Tom. Let's stop wherever you are and get a gun count.

45:07:53 C We're at 47 clicks. The digits are 2530.

45:07:57 CC Okay. Your last reading 2530?

45:08:02 CC Okay. Canaries will have you here in 4 or 5 minutes.

45:08:08 C You want us to continue on until we get the total load dumped, right?

45:08:12 CC No. Let's just leave it go right there. That's good enough.

45:08:14 C Roger.

CANARY ISLANDS

45:11:36 CC Gemini IX, Canary CAP COM.

# CONFIDENTIAL

## CONFIDENTIAL

45:11:40 C Canary, IX. Go.

45:11:41 CC Roger. Would you put your thermometers in for the oral temp?

45:13:13 CC Gemini IX, Canary. We have a valid temp on both. Would you place your Radiator to FLOW?

45:13:21 C FLOW?

45:13:22 CC Roger.

45:13:26 C I'm standing by for the PLA update.

45:13:28 CC Roger. We'd also like your water management system back to NORMAL configuration and Evaporator Heater OFF.

45:13:35 C Evap Heat is OFF.

45:13:37 CC Okay, IX. I'll give you the area and the times and then we'll go back for the bank angles and weather.

45:13:43 P Roger. Stand by one, please.

45:13:45 CC Roger. Standing by.

45:14:05 CC Gemini IX, do you still have an EVAPORATOR PRESSURE light?

45:14:07 C Negative. It's out and I've got the Heater OFF, but I'm ready to copy.

45:14:11 CC Roger.

45:14:27 CC Gemini IX. Area 29-1: 44:34:30; 20 plus 48; 26 plus 58. Area 30-1: 46:10:02; 20 plus 58; 27 plus 09. Area 31-1: 47:44:48; 21 plus 12; 27 plus 38. Area 32-4: 50:37:23; 20 plus 55; 26 plus 50. Area 33-4: 52:10 - correction on that - the GET RC is 52:12:49; 21 plus 05; 27 plus 18. Area 34-4: 53:48:18; 21 plus 12; 27 plus 33. Area 35-3: 55:07:29; 20 plus 49; 26 plus 50. Area 36-3: 56:42:55; 20 plus 59; 27 plus 07. Area 37-3: 58:18:23; 21 plus 13; 27 plus 22. Are you ready for your bank angles?

CONFIDENTIAL

# CONFIDENTIAL

179

45:16:46 C Go.

45:16:47 CC Roger. All the bank angles are as follows: roll left 85, roll right 95. The weather in the following areas is marginal. 30-1, 31-1, 35-3, 36-3 and 37-3. There is no Sep Maneuver associated with any of these areas. Do you copy?

45:17:22 C Roger. Gemini IX. Would you give me the times again for 29-1 and 30-1, just GET.

45:17:30 CC Roger. 29-1: 44:34:30; 30-1: 46:10:02.

45:17:45 C Got them all.

45:17:46 CC Roger.

45:17:48 C Water panel is NORMAL and we're starting to move the Platform up now in Horizon Scan mode.

45:18:27 CC Gemini IX, we'd like a food and water report from each crewman.

45:18:31 C Stand by.

45:18:38 C Okay. Since the last time, we've only had about 40 ounces of water and we dumped some in the water boiler and we've had one meal apiece.

45:18:54 CC Can you give me a sleep report?

45:18:57 C Roger. We had about 4 hours of solid sleep and for about 6 to 8 hours we dozed.

45:19:06 CC Roger. Copy.

45:19:18 CC You're looking good, Gemini. You can go ahead with your fuel cell purge when you're ready.

45:19:28 P Fine. Roger.

CARNARVON

45:48:01 CC Gemini IX, Carnarvon CAP COM. All systems are GO. Would you place the Quantity Read switch to ECS O2?

# CONFIDENTIAL



## CONFIDENTIAL

45:48:07 P Gemini IX. Roger.

45:48:23 CC FUEL CELL O<sub>2</sub>.

45:48:37 CC FUEL CELL H<sub>2</sub>.

45:49:05 CC Quantity Read's OFF.

45:49:13 CC When you don't have a mouthful up there, we'd like a Prop Quantity readout, when you get a chance.

45:49:18 C About 7 percent.

45:49:19 CC Okay.

45:49:20 C 6 to 7 percent.

45:54:59 P Roger, Carnarvon.

## HOUSTON

46:29:28 CC Gemini IX, Houston.

46:29:30 P Go ahead, Houston.

46:29:31 CC Roger, Gene. We're going to go ahead early on this Crossfeed so we can take a look at it across the States. We'll go ahead and close the Crossfeed, with Fuel Cell O<sub>2</sub> Heater OFF, and we'll come back on with that Heater at Carnarvon. We want to watch that pressure, temperature on that for awhile.

46:29:53 P Okay. The Fuel Cell O<sub>2</sub> Heater is OFF now and you want the Crossfeed CLOSED. Is that correct?

46:29:58 CC That's affirmative.

46:30:00 P Okay. It's CLOSED and the Heater is OFF.

46:30:03 CC Roger. Got some good news for you. Your Cubs won yesterday, 5 to 3.

46:30:07 P Great! How'd the Astros do?

46:30:09 CC Well, I'm sorry to say they were on the wrong end

CONFIDENTIAL

of a 9 to 6 score.

46:30:13 P Yes, I was batting zero yesterday, 500 today, maybe a thousand tomorrow.

46:30:19 CC That's a boy! How about a thousand by noon?

46:30:21 P Yes, that's all right.

46:31:35 CC Gemini IX, Houston.

46:31:37 P Roger, Houston.

46:31:39 CC Roger. You have your GO for 46-1.

46:31:43 P Thank you.

46:31:55 P How's the weather down there today?

46:31:57 CC Well, it was a little foggy when I came in this morning. I think it's probably going to be nice. It's real good now, the latecomers say.

46:34:44 CC Gemini IX, Houston.

46:34:46 C Houston, IX.

46:34:47 CC The little test we ran a little while ago with that water, Tom, and dumping that stuff overboard, we're not quite sure what's happening, so would you give us a gun count when you complete drinking water any time in the next two revolutions?

46:35:05 C Okay. Roger. ... we'll give you one later on.

46:35:09 CC Roger.

46:35:51 CC IX, Houston. On that water - we only need that when you're through drinking, just before the EVA. That's all we're really interested in, and we do want you to tank up on that stuff.

46:36:02 C Roger. We've been going pretty good on it.

46:36:05 CC That's a boy!

46:36:35 C Right now we're putting on the Y connectors and

## CONFIDENTIAL

taping the connections.

46:36:43 CC Houston. Roger.

46:42:36 CC Gemini IX, Houston. We have approximately 1 minute to LOS and from now on we'll be passive. We'll give you a call at AOS and 1 minute from LOS.

46:42:48 C Roger. We'll keep you informed. We're getting Y connectors on and working through there.

46:42:54 CC Roger.

46:42:55 C Sequence 24.

46:42:56 CC Roger, Tom. Thank you.

## CANARY ISLANDS

46:47:20 CC Gemini IX, Canary CAP COM. We have you GO on the ground. You need not acknowledge this transmission. We are standing by.

46:49:34 C Canary, you can inform Houston we've got the big snake out of the black box.

46:49:38 CC Roger, IX.

## KANO

46:55:48 CC Gemini IX, Houston. Standing by.

46:55:52 P Roger, Houston. We're still at it.

46:55:56 CC Okay.

46:59:00 CC Gemini IX, Houston. You can go back to Fuel Cell O<sub>2</sub> Heater to AUTO, at your convenience. Over.

46:59:49 C Got it, Dick.

47:01:45 CC 1 minute LOS, Kano.

CONFIDENTIAL

# CONFIDENTIAL

183

47:01:59 C Roger. We have Sequence 40.  
47:02:01 CC Roger, Tom. Thank you.

## TANANARIVE

47:08:15 CC Gemini IX, Houston. Standing by.  
47:08:18 C ...  
47:10:39 CC IX, Houston. Go.  
47:10:41 C I was having a little trouble with the Plat mode here. I'll let you know about it.  
47:10:48 CC You're having a little trouble with what, Tom?  
47:10:51 C Roger. It was Plat mode. It was in PLAT until we took off in a big roll on me. I'll keep you informed. I've got it back, coming back to 0, 0, 0 degrees.  
47:11:00 CC Roger. Understand.  
47:13:27 C Houston, Gemini IX.  
47:13:29 CC Gemini IX, Houston. Go.  
47:13:31 C I may need No. 3 Thruster. I'm not sure. Stand by.  
47:13:35 CC Roger. Understand No. 3.  
47:13:46 C Either yaw right or roll left ...  
47:13:51 CC Roger.  
47:14:19 C Okay. You still ...  
47:14:27 CC This is Houston. Roger, Tom - we have 1 minute LOS, Tananarive.  
47:14:33 CC Tom, what was that last ... No. 3 Thruster is out?  
47:14:37 C Roger. No. 3 Thruster is out.

# CONFIDENTIAL

## CONFIDENTIAL

47:14:45 C ... secondary retrofire power is ... Thruster.  
No. 3 Thruster is out.

47:14:57 CC Roger, Tom. Understand. Suggest roll logic to  
Pitch.

47:15:02 C ...

## CARNARVON

47:22:45 P Hello, Carnarvon. Gemini IX.

47:22:47 CC Go ahead, IX.

47:22:48 P Roger. Pass this on to Houston. I've got a real  
weird situation here with the control system.

47:22:53 CC Go ahead.

47:22:54 P ... Part of your PRIMARY or SECONDARY ACME BIAS.  
When I'm in PLAT, I'm 0, 0, 0 degrees now, and to  
Aline the Platform, I steer to the yaw needles,  
but I have to steer away to be away from the roll  
and pitch needles. To get the Platform to 0, 0, 0  
is like being in the 180 NSR brake. Know which way  
the needles go?

47:23:17 CC Roger.

47:23:19 P My yaw needle brings the Platform right in, or I  
have to move the pitch needles up. I have to pitch  
down to bring it in, or when the roll needle is to  
the right I have to roll left. Looks like the logic  
is reversed on the roll and pitch.

47:23:32 CC Okay. Stand by.

47:24:26 CC Are you in ACME SECONDARY logic?

47:24:28 P I'm in PRIMARY ACME BIAS power, PRIMARY ACME BIAS  
power. SECONDARY ACME BIAS power gives the same  
results.

47:24:37 CC Roger.

CONFIDENTIAL

# CONFIDENTIAL

185

47:24:39 P Now, I'll go to SECONDARY ACME logic.

47:24:58 P Okay. SECONDARY logic, pitch gives the same as PRIMARY. The pitch needle is fly away ... when you're 0, 0, 0 degrees.

47:25:22 P The roll is the same. Whether in PRIMARY or SECONDARY ACME logic makes no difference. The yaw and pitch and probably the roll and pitch needles are fly away ... at 0, 0, 0 degrees.

47:25:34 CC Roger.

47:25:39 P It gave me PLAT and suddenly spun me up to about, I'd say, 20 to 30 degrees per second until I caught it DIRECT.

47:25:47 CC Roger.

47:25:48 P I'm now in PULSE at 0, 0, 0 degrees ... between PLAT and ATT ... and status is GO on the EVA list.

47:25:57 CC Roger. Understand.

47:26:44 CC Run a little test and give us a shout here.

47:26:47 P Okay. I'll call you through the RATE COMMAND, DIRECT. Our REENTRY RATE COMMAND may all appear to be okay as far as the control motion ...

47:26:54 CC Good show.

47:26:57 P When shall I come in and knock it off in EVA preparation here?

47:27:03 P We'll check No. 3 Thruster here in just a minute.

47:28:13 C Okay. Houston, Gemini IX. I'm in Plat mode now, 0, 0, 0 and it looks good.

47:28:18 CC Okay. Tom, we'll see you around next time.

47:28:20 C Roger. Good show. We thought about everything but the brake. We were on the recorder through all types of control motions. Okay. We're going on with the sequence.

# CONFIDENTIAL

## CONFIDENTIAL

47:28:29 CC Roger.

## CANTON

47:43:19 CC Gemini IX, Houston standing by.

47:43:21 C Roger, Houston. It looks like we're all squared away. We're in LOS.

47:43:28 CC Roger.

47:43:35 C Sorry about that breaker.

47:43:39 CC There'll be days like that.

47:43:42 C Find these little curses now and then.

## GUAYMAS

48:00:33 CC Gemini IX, Houston standing by.

48:00:44 C This is Gemini IX. We're ...

48:01:01 CC Houston. Roger.

48:06:34 CC Gemini IX, Houston. For your information, we're expecting a Manual Duty - Manual Heater Duty Cycle on the umbilical of 4 minutes ON, 10 minutes OFF.

48:06:49 CC Gemini IX. Roger. What about your Power Circuits check?

48:18:45 CC IX. Houston's about 1 minute from LOS at Antigua.

48:18:51 C Roger, Houston.

48:19:08 C Houston, Gemini IX.

48:19:09 CC Go ahead.

48:19:11 C Roger. Sounds like ... the Relief valve on the ELSS is popping.

CONFIDENTIAL

# CONFIDENTIAL

187

48:19:18 CC Say again, please.  
48:19:19 C Roger. Sounds like the ELSS Relief valve is continuously popping.  
48:19:27 CC Roger. Understand.

## CANARY ISLANDS

48:25:46 CC Gemini IX, Canary CAP COM. We have you GO on the ground. You need not acknowledge. We're standing by.  
48:25:55 C Roger. Sequence 70.  
48:26:55 C Roger, Canaries. And you can tell Houston the Cabin Pressure Relief valve is repeatedly popping open.  
48:27:01 CC Roger. Cabin Pressure Relief.  
48:27:03 C Surely but slowly.  
48:27:07 CC Roger.  
48:28:19 CC Gemini IX, Houston standing by.  
48:28:22 C ...  
48:28:29 CC Houston. Roger.

## KANO

48:34:03 C Houston, Gemini IX.  
48:34:04 CC Gemini IX. Go ahead.  
48:34:05 C Roger. We're both - looks like we won't get any schedule here. Working particularly on the water gun. The counter reads 2650 when we're looking straight at it.  
48:34:17 CC Okay. Thank you, Tom.

# CONFIDENTIAL



## CONFIDENTIAL

48:34:20 C All the systems look real good.  
48:34:21 CC Very good.  
48:34:34 C ...  
48:34:53 CC We'll give you that Sunrise Check at Tananarive.  
We're 1 minute to LOS.

## HOUSTON

48:42:34 CC Gemini IX, Houston standing by.  
48:42:36 C ...  
48:42:57 CC Roger, Tom. Not reading you very well. Let's  
wait until you get more elevation.  
48:44:12 CC Gemini IX, Houston standing by for your message  
again.  
48:44:14 C Roger. We're well ahead of past time ... drink  
some water.  
48:44:24 CC Roger.  
48:44:27 C ...  
48:44:34 CC I couldn't get that. Would you like to have a  
time hack on your Event Timer for sunrise?  
48:44:41 C Okay.  
48:44:43 CC Okay. It's set up 20 minutes - we'll give you a  
20-minute time hack in about 1 minute, 45 seconds.  
48:44:55 C 20 minutes.  
48:44:56 CC Roger.  
48:46:21 CC Okay. We're about 15 seconds now to 20 minutes,  
counting up.  
48:46:31 CC 3, 2, 1,

CONFIDENTIAL

# CONFIDENTIAL

189

48:46:35 CC MARK.  
48:49:15 CC Gemini IX, Houston. 1 minute to LOS Tananarive.  
48:49:20 C ...

## CARNARVON

48:58:47 CC Gemini IX, Carnarvon CAP COM.  
48:58:49 C Carnarvon. Ready to go.  
48:58:51 CC Roger. Would you close the Tape Recorder circuit breaker?  
48:58:57 C Close?  
48:58:59 CC Roger.  
48:59:18 C Carnarvon, this is IX. Everything is GO here.  
48:59:21 CC Roger. Give us a minute or two here.  
48:59:50 CC Gemini IX, Carnarvon CAP COM. You're GO for depressurizing the cabin.  
48:59:54 C Roger. We'll depressurize at this time.  
48:59:58 CC Roger. Have a good trip.  
48:59:59 C Roger. See you next go-around.  
49:00:01 CC Roger.  
49:02:46 CC Gemini IX. Have you closed the EV visor yet?  
49:02:48 C Gemini IX. Negative.  
49:02:50 CC Roger.  
49:03:18 CC Gemini IX, Carnarvon.  
49:03:20 C Go, Carnarvon.  
49:03:21 CC Okay. I'm reading 791 on ECS O<sub>2</sub> pressure. You

# CONFIDENTIAL

## CONFIDENTIAL

want to put your Heater ON and crank it up?

49:18:48 P Okay. I'm at .2 and I'm satisfied.

49:18:52 C Roger. I'm at 4.0.

49:18:56 C ...

49:19:02 C ... cabin is 1/2 psi, 1-1/2 psi.

49:19:17 P Okay. And I read 5.

49:19:24 C Still reads 3-1/2. 1 psi, cabin pressure returning to 1/2 psi.

49:19:28 C Suit pressure is holding 3.7.

49:19:33 P And I'm holding about 4.2.

49:19:37 C Cabin stands at 1/2 psi and my suit is holding good.

49:19:42 C Okay. We're at 1/2 psi, Gene.

49:19:44 C We're just depressurizing the cabin. All systems are holding good.

49:19:45 P Yes. And I'm at 4.2. Okay?

49:19:46 C Roger. ...

49:19:48 C You all come back ...

## CANTON ISLAND

49:19:50 CC Gemini IX, Houston. Standing by.

49:19:54 C I have just depressurized the cabin and all systems are holding pressure good, 1/4 of a psi.

49:20:01 CC Can't read it.

49:20:03 C Cabin's in all the way. We are going to close our right-hand hatch while we sleep, and the cabin's in now (pressure is holding).

CONFIDENTIAL

# CONFIDENTIAL

191

49:20:06 CC Understand. Very good.

49:20:08 P Okay. You're down now, you want to - -

49:20:13 C I'll hang on ...

49:20:16 C It's locked.

49:20:18 C We've got 7 minutes to go to sunrise, so leave the sun visor down.

49:20:24 P Okay. I can't because it's wedged but I'll get it down as soon as I open the hatch.

49:20:27 C Sunrise: unlock the hatch, push the Spacecraft hatch so it's unlocked. We're at 1/4 psi pressure reading ... We've got about 6 minutes to go to sunup.

49:20:41 C You want to go ahead and get some of that out of the way?

49:20:43 P Get what out of the way?

49:20:45 C Get the hatch opening out of the way. Do you want to stay there awhile? Can you see?

49:20:53 P The only way I can see - as soon as I see the sun's rays coming over, Tom - well although we're using water ...

49:21:13 C ... see bottom line.

49:21:18 P Vent valve is open all the way. Is that right?

49:21:22 C Roger.

49:21:23 P Okay. And I read 4.0. You going to put it in VOX?

49:21:32 C Pushing thing to VOX.

49:21:34 C Houston, Gemini IX. We now get into VOX.

49:21:35 CC Okay, Tom. I am reading you loud and clear right now.

49:21:36 C How you read me, Gene?

# CONFIDENTIAL

## CONFIDENTIAL

49:21:37 P Okay. I'm reading you loud and clear, Tom, and I'm reading about 4.1 right now.

49:21:43 C Roger. We've got 5 minutes to go to midnight.

49:21:46 P All right.

49:21:47 C Before we've got to ...

49:21:50 C If we see anything that looks bad we'll go ahead and stop it.

49:21:53 CC Okay.

49:21:54 P Okay. Everything looks good. Why don't we go ahead and pop it?

49:21:56 C Okay. Go ahead. I'm holding this down.

49:22:01 P Okay. We're opening the hatch now.

49:22:02 C Roger. Stroke Number 1 and I'm going to hold it for you.

49:22:06 C I don't see the dogs - -

49:22:08 P ... now.

49:22:17 C - - The dogs are starting to rotate.

49:22:23 C Very slowly.

49:22:27 P Yes the ... in the way here.

49:22:30 C Scoot it over.

49:22:31 P Yes.

49:22:32 C There you go.

49:22:33 P Is it moving?

49:22:34 C I can't see it from here.

49:22:35 P There they go.

49:22:39 C Stand by for the pop. Real easy ... psi, Gene.

CONFIDENTIAL

# CONFIDENTIAL

193

49:22:47 P Okay. They should be open right now, Tom.

49:22:49 C Okay.

49:22:51 P Hatches coming open.

49:22:52 C Hatches coming open.

49:22:54 P Hatches open.

49:22:55 C All right. We have good ship-to-suit pressure, Gene.

49:22:59 P Suit pressure looks like about 4, Tom.

49:23:01 C I'm holding a good 3-1/2, Gene.

49:23:03 P Okay. It's still a little dark out, isn't it?

49:23:04 C Yes, it's kind of dark out there. All right, I'm going to do something there, then start the check list.

49:23:13 P Okay.

49:23:15 C Gain and Drive selectors to LOCK position.

49:23:18 P The lock and the handle are stowed.

49:23:19 C Roger. We're on the first page ...

49:23:25 P Okay. Let me shove the hatch further up, Tom.

49:23:26 C Okay. Now to throw the hatch a quarter ...

49:23:30 P Well - -

49:23:34 C Wait a minute. It feels kind of stiff here, doesn't it?

49:23:36 P - - Yes. Yes, a little bit.

49:23:37 C It sure does.

49:23:39 P It's pretty dark out here.

49:23:40 C I can't even see the light in front of you, Gene.

# CONFIDENTIAL

## CONFIDENTIAL

49:23:42 P All right.

49:23:44 C Now it looks like it's getting daylight.

49:23:51 P Man, the hatch is stiff!

49:23:52 C Is it stiff?

49:23:56 C As soon as the MAC thermal people make their latest calculations, we'll have a solution. How are you doing?

49:24:03 P Yes. Standing in the seat now.

49:24:06 C Okay. I've got the garbage bag for you if you're ready to heave it out.

49:24:11 P Yes.

49:24:12 P You better give it to me here, Tom.

49:24:13 C Okay.

49:24:18 P What? My heel caught on something?

49:24:19 C It's caught on the seat.

49:24:20 P That's all right. I'm all right now.

49:24:23 C Okay. Here comes the garbage bag.

49:24:25 C 3 feet-per-second Retrograde. Okay?

49:24:27 P Oh, man ! I can't - -

49:24:32 C ...

49:24:35 P - - Hallelujah!

49:24:36 C Okay. We've gotten rid of the garbage ...

49:24:39 P Boy, is it beautiful out there, Tom!

49:24:40 C Yes, it sure looks pretty.

49:24:42 P I'll grab my Hasselblad and take a picture of that.

CONFIDENTIAL

# CONFIDENTIAL

195

49:24:43 C Okay.

49:24:44 P But I can't turn around fast enough.

49:24:46 C Okay. Don't try. Let's go ahead with the next step.

49:24:49 P Okay. Afraid to see how these hatches work for us.

49:24:51 C Okay. How do they feel to you, Gene?

49:24:52 P I have to see how the handrails are.

49:24:56 P Well, it's hard to grab hold, but they'll be all right, I guess.

49:25:01 C You're kind of rocking the boat. The Plat mode is taking care of the situation, so we're okay.

49:25:06 P Well, I might try installing - the handrail in the back is out and it's a little dark, but I may be able to get this one.

49:25:15 C Yes.

49:25:18 P I got that one, she's out.

49:25:23 C Got him?

49:25:24 C Don't worry about it.

49:25:25 C Put the visor down when you're ready.

49:25:26 P Yes. Suit pressure - -

49:25:27 C How's your suit pressure, Gene?

49:25:28 P - - I can't see it, it's too dark out.

49:25:29 C Don't worry about it, Gene. Mine's holding 3-1/2.

49:25:35 C That's great. Just pull your EV visor down with the pressure getting right out there.

49:25:37 P Okay. My visor is down now, Tom.

# CONFIDENTIAL



## CONFIDENTIAL

49:25:39 C Okay. I'm going to push up on Spacecraft ... there, we've got that.

49:25:43 C Okay. Position the Gain and Drive selectors to LOCK. Roger.

49:25:49 P I checked the Gain selector.

49:25:51 C Both Gain selectors do lock, Gene.

49:25:54 P Okay. I'll check again but I already put them there, Tom.

49:25:56 C Okay. Final check on all systems, all Spacecraft systems.

49:26:03 P Stand by. Wait a minute, let me check these. They're locked and they're GO.

49:26:08 C Real good. Can you stand on your feet?

49:26:11 P Yes, and I want to float out.

49:26:14 C We've got the left-hand aft foot well pouch jettisoned. Next thing is our little experiment called S-12.

29:26:20 P It's a little bit dark yet, Tom. Let me see.

49:26:23 C Well, just stand out there and look at the sunrise, Gene. It looks pretty from here.

49:26:30 P It looks like I'm holding about 3.9 right now.

49:26:32 C Okay. I'm holding 3.5 in my suit and - -

49:26:35 P Yes, and I'm ... slow and very comfortable.

49:26:37 C - - Real good show!

49:26:39 C I'm going to pump up the ECS O<sub>2</sub> to make sure you've got a good go at 700.

49:26:47 P Okay. I'm turning around. Will try to get S-12 now, Tom.

49:26:49 C Okay. We'll retrieve S-12.

CONFIDENTIAL

# CONFIDENTIAL

197

49:26:52 C That sun is bright!

49:26:59 P I guess it is.

49:27:06 P Pull my leg down, Tom.

49:27:07 C Which leg?

49:27:08 P That one. Yes. Okay.

49:27:10 P If I get on the instrument panel, I keep from coming out.

49:27:11 C Okay.

49:27:13 P Okay. Suit pressure seems to be holding at 4.

49:27:15 C Okay.

49:27:18 P Everything else is pretty nominal right now.

49:27:20 C My suit pressure is 3.6.

49:27:23 C I feel real good.

49:27:32 C It feels good to have the computer running again. 1 minute after sunrise.

49:27:39 P Okay. The S-12 lanyard's gone.

49:27:44 C Roger.

49:27:46 P Here comes S-12, Tom.

49:27:47 C Okay. I'm waiting for it.

49:27:49 P Okay.

49:27:50 C Let me get it.

49:27:51 P Oh.

49:27:52 C Hang on to that ...

49:27:54 P I've still got it.

49:27:55 C Right. I've got S-12.

# CONFIDENTIAL

## CONFIDENTIAL

49:27:56 P Okay. I'm letting go.

49:27:59 C Roger.

49:28:01 C Man, I've got S-12 kind of secured down in my foot well.

49:28:06 P Okay.

49:28:07 C Among other things.

49:28:08 P Yes, join the club.

49:28:09 C Yes, how about that!

49:28:11 C Okay. We've got them.

49:28:13 C Check O<sub>2</sub> pressure. You've got to build it up when you can.

49:28:15 C Deploy the handrails?

49:28:17 C Got those?

49:28:18 P Handrail is deployed.

49:28:20 C Position cutters.

49:28:22 P Okay. Come on there, you cutters.

49:28:23 C Got them?

49:28:27 C ...

49:28:31 P Seven.

49:28:32 P Okay. I'm trying to get them now, Tom.

49:28:33 C All right.

49:28:46 P That's a long way back to that handrail.

49:28:47 C Is it?

49:28:48 P Yes.

49:29:06 C Want to hold your foot here, Gene?

CONFIDENTIAL

# CONFIDENTIAL

199

49:29:08 P Yes. You'd better hold me so I don't leave you.

49:29:11 C I've got you now.

49:29:15 C Hanging on, Gene.

49:29:18 P Okay.

49:29:25 C ...

49:29:27 P No. It's pretty much of a bear to get at these things because the handrail is so far back.

49:29:29 C Roger.

49:29:30 P But I think I can reach it.

49:29:35 C What do you see back there? Any hoses off the back end?

49:29:37 P What?

49:29:49 P I think the cutters will stay.

49:29:51 C Okay.

49:29:54 C Okay. We'll install the 16mm EV camera now.

49:29:55 P Pull me back down.

49:29:56 C I'll pull you down. Here you come in. Coming down.

49:29:59 P Okay. Pull me down some more.

40:30:01 C Coming down. Keep your legs together.

49:30:03 P Okay.

49:30:04 C Come back here!

49:30:05 P Okay.

49:30:08 C Install the 16mm camera with 5mm lens.

49:30:13 P Okay. Tom, put me back a little more.

# CONFIDENTIAL

## CONFIDENTIAL

49:30:15 C Okay.

49:30:17 P I don't see anything waving off the adapter from here.

49:30:20 C Good show. I've got you down in the seat now, Gene.

49:30:30 P Got to move my Hasselblad around a little bit.

49:30:31 C Okay.

49:30:35 P Okay. Let me tighten these devils.

49:30:37 C Got it?

49:30:39 P Okay.

49:30:40 C I'm holding you down here.

49:30:42 P Got the camera. Now let me check the settings again, Tom.

49:30:44 C Okay.

49:30:45 P Six frames per second, 1/200th of a second.

49:30:49 C That's right.

49:30:51 P And f:16. Right?

49:30:56 P It's a strange world out here, you know it?

49:30:57 C Yes. The stuff looks like the frame of a Ford except ...

49:31:18 P Come back here, camera!

49:31:19 C Got it?

49:31:20 P Yes.

49:31:21 C How are you doing?

49:31:22 P I had it in but it wouldn't snap down.

49:31:23 C Okay. Try it again.

CONFIDENTIAL

49:31:41 P Pull me down, Tom.

49:31:42 C What?

49:31:43 P Pull me down. Whoops! Okay.

49:31:56 P I don't understand that. Let me see.

49:32:01 C I've got your leg.

49:32:03 P Okay. Hold on to me a second.

49:32:25 P Well, that was a hard fit but it's in.

49:32:26 C It's in?

49:32:27 C Good show, Gene.

49:32:29 P Okay, Tom, let me turn around before I float out.

49:32:30 C Let me help, Gene.

49:32:31 P Pull that leg down.

49:32:32 C9 I've got this leg coming down.

49:32:34 C There we go.

49:32:37 C How's the EV Hasselblad on the ELSS?

49:32:39 P I'm all right.

49:32:41 P Medium flow and I've still got 3.9.

49:32:44 C Okay.

49:32:46 P How does the shrouding look to you now on this - -

49:32:49 C It looks good.

49:32:50 P - - this camera.

49:32:51 C It looks pretty good. I'm ready to let you out.  
The next thing is to attach the Hasselblad to the

## CONFIDENTIAL

ELSS chest pack.

49:32:56 P Okay.

49:32:57 C Put the lanyard and Velcro on.

49:33:06 P Hey, and while I'm standing here, Tom, let me at least get a picture.

49:33:10 C All right.

49:33:13 P We'll find out how easy it is to be able to take pictures with this thing.

49:33:15 C You're the highest photographer in the world, right?

49:33:20 P (Laughter) Not the highest paid, the highest.

49:33:22 C Not the highest paid, but the highest photographer. I guess that's something ...

49:33:27 P Man, is that beautiful!

49:33:29 C Yes, it looks good, doesn't it?

49:33:30 P Oh, boy, Tom!

49:33:31 C Okay. We're running pretty good on our Flight Plan, now.

49:33:39 C Okay. The next big item is to take the umbilical out of the bag and feed it out. Then move back to the docking bar, Gene.

49:33:46 P Okay.

CONFIDENTIAL

## CALIFORNIA

49:33:48 CC Look, fellows, about - you broke the docking bar?

49:33:52 P Neil, get back to work on the thrusters.

49:33:53 C Let me know when you start back toward the aft thrusters and I'll shut off the control power.

49:33:56 P Okay. Let me take a breather, Tom.

49:33:57 C Okay. Take it easy and relax.

49:34:01 P Boy, everything wants to ride up. The ELSS wants to ride up in my face. Everything I let go of goes up.

49:34:11 P Let me get these Velcro pads on.

49:34:12 C Okay.

49:34:13 CC Houston standing by.

49:34:14 P Affirmed.

49:34:15 CC Okay.

49:34:37 C Those look real sneaky.

49:34:39 P Say Dick, if you're listening and I know you are, boy, you've got a beauty coming.

49:34:49 C Houston, Gemini IX. How do you read me?

49:34:54 CC We read you loud and clear, Tom.

49:34:56 C Don't you read me okay on VOX, Neil?

49:34:59 CC Roger. You're clipping a little bit, Tom, but we're getting most of it.

49:35:00 C Okay. We've got the EVA camera put up and we're taking a break here to relax.

49:35:04 C Gene's taking a couple of pictures, standing on the seat. We'll be going on with the Flight Plan shortly.



## CONFIDENTIAL

49:35:06 CC Okay.

49:35:11 CC Very good.

49:35:13 P Okay. I'm relaxed for a second, Tom.

49:35:15 C While I'm having the break, I think I'll relax and have a cup of coffee.

49:35:19 CC Okay.

49:35:21 P On the next pass, we'll talk to you and George (George Low, NASA official). I'm sure you don't want to talk now.

49:35:27 P What part of California are we going to come up on, do they know?

49:35:30 C Neil, it looks like we're going to be coming up on Baja California. That's about right on the track...

49:35:41 CC Yes. That's right, Tom.

49:35:46 C Okay. Gene feels real good in ELSS now.

49:35:49 C The temperatures are good; our suit pressures are holding real good.

49:35:54 CC Houston. Roger.

49:35:56 C Okay.

49:36:11 P About 2 more minutes, Tom.

49:36:16 C Okay. You want to pass me a belt around? Is that what our next step is?

49:36:18 P Okay. I'm going to see if I can get out of here, Tom and -

49:36:20 P I passed it up.

49:36:22 C Okay. I'll help guide your feet out, Gene, and I'll start taking some pretty pictures. Don't back off the Scanner Heater circuit breaker, whatever you do.

CONFIDENTIAL

# CONFIDENTIAL

205

49:36:36 C Ease on out there, Gene. Here we go.

49:36:38 P Whew! We're coming right over LA, I think.

49:36:40 C ...

49:36:42 P I can see Edwards - I can see the Islands.

49:36:43 P I want to go up. I've got to give myself a shove forward.

49:36:46 P I saw Edwards. That's a pretty lakeside.

49:36:51 C See the F-4 near the runway?

49:36:52 P Yes.

49:36:54 C That was a little thing the Air Force built.

49:37:05 P Okay. Can you keep a bearing in there or what?

49:37:09 P I'm keeping the bearing as closely as I can.

49:37:11 P Okay.

49:37:14 P Can you get it?

49:37:26 P We're south of LA. There's Baja California.

49:37:31 C Yes. Look out for ... Lake ...

49:37:36 C Okay. Can you pull that in anymore?

49:37:40 P Okay.

49:37:43 P That's about it, Pete, for today.

49:37:44 CC ...

49:37:45 C I can't, you've got some ...

49:37:48 P Taking a picture of Baja right here.

49:37:49 C Okay.

49:38:09 C Say, is that terrific! Gene's taking a picture of Baja California, looking ...

# CONFIDENTIAL

## CONFIDENTIAL

49:38:14 CC Houston. Roger.

49:38:21 P See how everything goes up, Tom?

49:38:23 C Yes. Even out here.

49:38:27 P Okay.

49:38:29 C Right on the nose. Roger.

49:38:33 P Okay. Wait a minute.

49:38:35 C Take it a little bit slower ...

49:38:44 C Pressure holding good?

49:38:46 P Yes, mine's holding good.

49:38:49 C No possible leak?

49:38:52 P Okay. You better give the camera now.

49:38:55 C Wait a minute here; I'll switch it.

49:39:07 P That space is rolling along out here.

49:39:09 C Yes.

49:39:11 C 12 minutes, 30 seconds ...

49:39:19 P Okay. I'm going to see if I can get out of here, Tom.

49:39:21 C Okay. I'll - almost good.

49:39:36 C Good enough for a day.

49:39:42 P If I'm going to go out, I got to get myself pushed forward.

## TEXAS

49:39:55 P I can't get there unless I come down a little bit.

49:39:56 C You want to come back in and let me help you with this?

CONFIDENTIAL

# CONFIDENTIAL

207

49:39:57 P Yes.

49:39:59 C Give me your foot.

49:40:06 P Okay. Let it go now.

49:40:08 C You've really changed the moment of inertia of the Spacecraft.

49:40:10 P Okay. Let it go, Tom.

49:40:13 C Don't let it suck you away.

49:40:20 C It looks pretty out there, Gene. It surely wants to float up though.

49:40:25 P Yes.

49:40:30 C Now we've got the docking bar mirror. Looks like you're upside down and have all kinds of snake around you.

49:40:39 P Hello, there! If I can get over here, I'll take a picture, Tom.

49:40:44 C Okay. I don't know how long you can hold out there; you want to float up right away.

49:40:46 P Yes. Boy, it's really hard to get any torquing with one hand!

49:40:49 C Yes, I can see that.

49:40:51 C If you let go, you're going to fly right off that thing.

49:40:54 C Hold it ... with the Spacecraft Plat mode ...

49:41:01 P If I can ever get hold of it with my other hand.

49:41:06 C Yes. Okay. Let me get some pictures of the ... tube.

49:41:10 C Smile.

49:41:25 P Boy, am I smiling!

49:41:27 C Okay. I've got a picture, Gene.

# CONFIDENTIAL

## CONFIDENTIAL

49:41:30 P I'd like you to smile.

49:41:31 C Okay, I'll smile. I've got a picture. I'll get back in and we'll press right on with the Flight Plans. I've got another of you.

49:41:44 C Okay. Mark 15 minutes and 10 seconds after going out there.

49:41:49 P Okay, Tom.

49:41:51 C All right.

49:41:54 P I'm going to pitch off here to the left.

49:41:58 C Okay. Come on over to the left.

49:42:03 P To my left over here?

49:42:04 C To your left.

49:42:06 P Okay. I'll come to your left. It doesn't make any difference.

49:42:07 C Come on down there so I can help you down ...

49:42:10 C Let me know if you get down near those thrusters.

49:42:13 P I don't know where I'm going right now, so hold on.

49:42:15 P Yes. I'm getting there, Tom.

49:42:17 C Well, let me know when you get on the adapter. Maybe you ought to bang on it now.

49:42:22 C Let me know to shut it off. Shut them off?

49:42:25 P Yes. I'm all right.

49:42:26 C Okay.

49:42:27 P Okay. I've got the snake all over me.

49:42:30 C You've got what?

49:42:31 P Snake all over me.

49:42:36 P Have you got this other camera on?

CONFIDENTIAL

# CONFIDENTIAL

209

49:42:37 C I've got the EVA camera on. You're looking good all right.

49:42:42 P Okay. If I can push off, I'm going to try to get out here where I can evaluate this umbilical.

49:42:46 C Okay. Go ahead. (Laughter)

49:42:53 P I can't get my feet in the right place to push off.

49:43:06 P There goes your dump.

49:43:07 C That's all right.

49:43:08 P Okay, Tom. Here I go.

49:43:10 C Okay. There you go, Gene. Real good.

49:43:15 P I got caught.

49:43:22 C Guaymas, IX here. Looks like the umbilical by itself is a pretty hard row to hoe.

49:43:30 C What do you think, Gene?

49:43:31 P Yes, it's not the best.

49:43:34 C Okay, Houston. He's right by my left window now slowly rotating. I'll take a picture.

49:43:42 P I can't get over here, Tom, to get where I want to get.

49:43:46 P Okay. See if I can get a start and push away.

49:43:49 C All right. I'll be all right.

49:43:50 C Okay. Go ahead - taking a picture of you.

49:43:54 C Okay. 17 minutes and 20 seconds after sunrise.

49:44:06 P Okay, Tom. I'm going straight for you.

49:44:08 C Okay, I can see you in the darkness while we're here and appears ... looking real good. Let me know when you get near those thrusters.

# CONFIDENTIAL

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49:44:12 P Yes. I can see you in the cockpit. I'm overhead; you're real good.

49:44:22 P Okay. I've just been back towards them, Tom.

49:44:25 C Come back in soon as I turn them off.

49:44:30 P You better turn them off, I can't - ...

49:44:32 C I'm going to take a ... picture through the mirror.

49:44:41 C Let me know when you ... I've got to get the thing Alined up ...

49:44:56 P Okay. I'm out in front now.

49:44:58 C I'm going to go to PULSE now.

49:45:06 P Okay. I'm going further out in front, Tom.

49:45:08 C Okay. It really disturbed the heck out of the platform here.

49:45:15 P Boy, what a beautiful Spacecraft, Golly!

49:45:18 C Okay. I want to get back in Plat mode here.

49:45:22 P I'm trying to get out in front here where I can get a good evaluation of pod and this umbilical.

49:45:30 C Yes, I've got it coming back into 0, 0, 0 degrees.

49:45:32 P I'm going to try to get over on your side and evaluate those Velcro pads, Tom.

49:45:34 C Okay.

49:45:46 P Okay. I'm drifting back towards the adapter, Tom.

49:45:49 C You are? Okay. I'm in Pulse mode.

49:45:51 P Okay.

49:45:58 C Let me know when you're near one of those thrusters.

49:46:10 C Like my hand, bring ... torch.

CONFIDENTIAL

49:46:12 P Okay. What happened, I started using one of those Velcro pads and - I lost it. It came right off my hands.

49:46:20 P Well, I'm right outside your window.

49:46:32 C I'm going to PULSE.

49:46:34 P Say again?

49:46:37 C Going to PULSE.

49:46:39 P Well, I can for a little bit but I want to evaluate these hand pads if I can.

49:46:49 P Okay. Now I'm stuck on this thing with a hand pad right now but they won't stay. The Velcro's not strong enough here.

49:46:54 C Velcro won't hack it, right?

49:46:56 P Well, not there it won't, unless that nose is burned off slightly.

49:47:01 C You going back on that adapter again?

49:47:03 P Yes. Wait a minute.

49:47:08 C I'm going to Plat mode. Where are you?

49:47:13 P I'm right on top of your window.

49:47:14 C I've got a picture of you.

49:47:18 C You'll have to put some torque on the Spacecraft, Gene.

49:47:20 P The only control I have is the umbilical and, of course, the shorter it is, the better control I've got.

49:47:26 C Yes.

49:47:27 C Okay. We've got 20 minutes of sunrise and 30 minutes to sunset.

49:47:30 P Okay.



## CONFIDENTIAL

49:47:34 C Okay. 35 minutes and we'll change that film pack. Okay?

49:47:39 P Okay, Tom.

49:47:44 C ... Looks like ...

49:47:51 P Watch it, Tom, I'm coming down. I'm trying to go up here now if I can, away from you. Right out in here.

49:48:03 C I'm going to go back to Plat mode.

49:48:06 P Okay. I'm at the end of the umbilical.

49:48:08 C Okay.

49:48:10 P Man, is it - -

49:48:12 C Yes, you look like a real snake out there.

49:48:20 C You're going end over end, Gene.

49:48:21 P - - Yes.

49:48:44 P I want to see what I can do around the nose here.

49:48:46 C Okay.

49:49:01 P Oh, boy. All I did was twitch my fingers and I gave myself a torque that would'nt quit.

49:49:04 C ...

49:49:13 C Okay. Come on over in front of the window and I can get a picture of you. Go on with your evaluation.

49:49:20 P Yes.

49:49:27 P Boy, the shorter the umbilical, there's obviously much better room you've got.

49:49:30 C Yes.

49:49:31 P When I get back there, I'll try this other hand pad, but so far it doesn't look like it's stiff enough.

CONFIDENTIAL

# CONFIDENTIAL

213

49:49:42 C You'd better shorten up on your umbilical there, Gene.

49:49:44 P Yes. As soon as I find it, Tom.

49:49:46 C Okay.

49:49:56 P There goes that other hand pad. I couldn't keep them on.

49:50:01 C Okay. Understand. The Velcro hand pads came right off your ...

49:50:03 P One - one came right off my hand.

49:50:10 C This is really a fine piece of gear. I can see you real well.

49:50:15 P Okay, Tom. I'll come back to the hatch here for a second. What time is it?

49:50:20 C Okay. Fine. It's about 24 minutes after sunrise.

49:50:34 P It takes a lot longer to get anywhere with this umbilical than anyone figured, I'm sure.

49:50:42 C Okay. Your foot just kicked my head here. Do you want me to help you in the hatch, Gene?

49:50:51 P Well, (laughter), I don't have any torque capability.

49:50:56 C Let me have your foot with my hand here and I'll see what I can do for you.

49:51:01 P How's that?

49:51:06 C Just kick your foot forward just a little bit.

49:51:10 C Come on. Don't kick that dear Heater circuit breaker, whatever you do.

49:51:15 P Okay. I've got one foot.

49:51:18 C Okay. Now you're coming in.

49:51:20 P Okay.

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49:51:26 C Okay, Gene, come on down. Come on down. How are you doing there?

49:51:34 P I must be under something. Okay.

49:51:39 C Pretty good?

49:51:41 P It looks like you had a nice lunch. ...

49:51:46 C How steady are you now, Gene?

49:51:49 P Okay, Tom. I'm going to slow down and take a rest.

49:51:54 C Okay.

49:51:58 C Houston, Gemini IX. How do you read?

49:52:01 CC We still read you, Tom.

49:52:02 C Okay. Gene is finished with the umbilical evaluation and it looks pretty rubbery out on the adapter. When I get back there in the cockpit I can see him real well with his docking bar mirror. It's a real useful piece of gear. Our suit pressures are holding good and we're both real comfortable in the suits. We're standing by to ...

49:52:22 CC Roger. We've got that.

49:52:38 P Boy, this thing really snakes, you know it?

49:52:54 C About 6 minutes and 20 seconds to go.

49:53:44 P ... time resume ...

49:53:50 P Tom, can you read me?

49:53:51 C ...

49:54:01 P ...

49:54:09 P It's still running.

49:54:10 C ...

49:54:19 P ...

CONFIDENTIAL

# CONFIDENTIAL

215

49:54:27 C What's that?

49:54:28 P ...

49:54:58 C Hello at Grand Turk.

49:55:01 CC ...

49:55:06 C Little warm in spots.

49:55:28 CC Gemini IX, Houston. Let's take a check on that primary tank pressure now.

49:55:35 CC Bump it up.

49:55:46 P Pretty fantastic out here, Tom.

49:55:51 C ...

49:55:56 P ...

49:56:26 CC Houston to ... LOS.

49:56:55 P Okay. Stay with that, Tom.

49:56:57 C ... all squared away for you, Gene.

49:57:00 P ...

49:57:28 CC LOS Antigua.

49:59:22 C Yes.

49:59:28 C Okay, okay at 32 minutes.

50:00:32 C Let's go over the part about the trip back to the adapter. It gave some pretty good torques to the Spacecraft, so get back out of the way of the thrusters as soon as you can when you get back there.

50:00:42 P Okay.

50:00:43 C I'll have to place it in Pulse mode here.

50:00:46 P It may be better because I'll be going back on the rails this time.

# CONFIDENTIAL

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50:00:54 C Okay.

50:01:20 P How are we doing on time?

50:01:22 C 34 minutes. Do you want to go back to the adapter earlier, or just stay here and relax?

50:01:29 P Oh, it's probably going to take a little bit more time to close the hatch than I thought. The seal is still soft.

50:01:37 C What?

50:01:38 P The seal is still soft.

50:01:39 C Yes, it is.

50:01:48 CC Gemini IX, Houston standing by over Ascension.

(Note: Transmissions through 50:05:21 were garbled. Unable to clarify.)

50:01:51 C Roger ...

50:02:03 CC Okay. We're not reading you very well yet.

50:02:06 C ...

50:02:08 CC Roger.

50:02:18 CC Tom, can you see whether the Tape Recorder Power circuit breaker is ON or OFF on the right console?

50:02:32 C It is ON.

50:02:33 CC Okay.

50:02:42 C ...

50:02:57 C ...

50:02:57 P ... close the hatch.

50:03:01 C ... I don't think so.

50:03:31 P Get out here so I can see ...

50:03:46 P ...

CONFIDENTIAL

# CONFIDENTIAL

217

50:03:51 P ...

50:03:57 P ...

50:04:00 P ...

50:04:03 C ...

50:04:19 P Pretty close.

50:04:22 C ...

50:04:27 P Okay. ... out there.

50:04:29 C Okay.

50:04:34 P ...

50:04:38 C ...

50:04:40 P ...

50:04:45 C ...

50:05:03 C ... hold it back to 20 degrees.

50:05:12 P ... all the way, go ahead.

50:05:14 P Can you ...?

50:05:16 C ...

50:05:21 P ...

50:11:11 P Let's go real slow, Tom. I have no EV lights back here. You'd better turn them on.

50:11:13 C You have the lights on?

50:11:14 P No.

50:11:15 C Want me to turn them on?

50:11:16 P Yes.

50:11:17 C Good show. Let me get this thing coming around here.

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50:11:49 C I'm having some trouble on them, Gene. Just a minute.

50:11:53 P I want the lights and thrusters.

50:11:54 C I've got the lights on.

50:11:56 P Okay. I've only got one of them on back here. The one light.

50:11:58 C One light. Roger.

50:12:10 P Okay.

50:12:12 C Pull your umbilical to remove slack. You all squared away?

50:12:15 P Yes.

50:12:16 C Unstow and position mirrors.

50:12:21 P Stand by.

50:12:58 P Okay, the mirrors are out.

50:13:00 C Okay. I bet you have a fantastic view back there, Gene.

50:13:03 P I don't know. I'm looking the wrong way.

50:13:06 C That's right. Okay.

50:13:10 C Unstow pen lights and actuate lights; attach Velcro to the hand bars.

50:13:36 P Yes. Number 1 is working.

50:13:37 C Good show!

50:13:44 P ... going to try to get around back here.

50:13:46 C Is it?

50:13:47 P Yes.

50:13:56 P And the other one does not work. How's that?

CONFIDENTIAL

# CONFIDENTIAL

219

50:13:58 C What's this?

50:13:59 P The one on each side.

50:14:00 C Okay. One pen light doesn't work, one EVA light doesn't work.

50:14:10 C Okay.

50:14:12 C Ready for the next step?

50:14:15 P Yes. Let's go slow though.

50:14:17 C I'm going back in Plat mode. Stand by for a couple of bumps.

50:14:25 C Okay. We're back in Plat mode, Gene.

50:14:29 P Okay.

50:14:30 C Okay?

50:14:32 C The next one is: Connect black tether jumper hook to the AMU tether ring.

50:14:39 P Okay. If I can find it.

50:14:41 C Right. Understand you are back in the adapter and it is very hot.

50:15:58 P Yes, it's very, very hot.

50:16:08 C Go back to Houston ... burn.

50:16:14 C Hello, Houston. Gemini IX.

50:16:20 C Houston, Gemini IX.

50:16:36 P Yes. We're really cooking back here.

50:16:37 C Okay. Just take your time, Gene.

50:16:54 C One thing about it, we allocated ourselves plenty of time and we're starting to use one of these little unknown things like the hatch and all that.

50:17:05 C Okay, Gene. Nighttime coming your way shortly.

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50:17:08 P Okay. I'm going to wait until it gets here.

50:17:14 C How do the lights work? As good as we hoped?

50:17:16 P It's not dark back here yet.

50:17:22 P They're only half as good. Only one is on.

50:17:25 C How's that other pen light? You have the pen light that's going to help you there?

50:17:29 P Yes. I've got one pen light and one EVA light.

50:17:30 C Roger.

50:17:31 P The umbilical hung up back there, Tom.

50:17:32 C It did hang up. Right?

50:17:33 P Yes.

50:17:34 C But you got it loose?

50:17:35 P Yes.

50:17:36 C Good show, Gene.

50:18:13 P At about 3.9.

50:18:15 C Okay. How's the temperature inside the suit, Gene?

50:18:16 P Hot and warm on my back.

50:18:17 C Hot and warm on your back. I can imagine the sun beating down on you.

50:18:38 P How much time do we have before sunset?

50:18:40 C I can set up and see the sunset in my rear-view mirror. I'm up in no time here, Gene.

50:18:48 P You are?

50:19:15 C Still working on the ... relation to relaxing.

50:19:17 P Just relaxing, Tom. I'm ready to start here in a minute. What's the next step?

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50:19:22 C Okay. Unstow tether bag and connect both orange AMU tether hooks to ring on umbilical tether.

50:19:32 P Okay. Stand by.

50:19:37 C Hello, Houston. Gemini IX.

50:19:44 C Hello, Houston. Gemini IX.

50:19:49 CC Gemini IX, Houston. Standing by. We're reading you weak and garbled.

50:19:55 C Roger. Gene's in the adapter now. Going through Step 7 here, attach the tether bag and he's considerably warmer on the back. I believe it is from what we anticipated, so we are taking a break here until he cools off.

50:20:09 CC We can't make you out, Tom.

50:20:12 C Roger. I'll have the Tananarive CAP COM Relay contact you.

50:20:34 C Okay. Going back to medium flow. Place time at 54 minutes (EVA time from hatch opening).

## TANANARIVE

50:20:41 C Hello, Houston. Gemini IX.

50:20:51 CC Houston. Go ahead.

50:20:53 C Roger, Houston. Gemini IX. Our ECS O<sub>2</sub> quantity is now 47 percent.

50:21:03 C Would you recommend that we open the crossfeed between the ECS O<sub>2</sub> and the fuel cell O<sub>2</sub>?

50:21:17 CC This is Houston. We're not reading you very well at all.

50:21:27 C How's it going, Gene?

50:21:30 P I'm still trying to get these darn hooks, Tom.

50:21:32 C Okay.

## CONFIDENTIAL

50:21:47 P Let it go in the high flow until I cool off.

50:21:49 C Okay.

50:21:58 C Houston, Gemini IX. How do you read?

50:22:34 C Hello, Houston. Gemini IX. Do you read through Tananarive?

50:22:43 C Tananarive contact, Gemini IX.

50:22:46 CC Gemini IX, Tananarive contact. Go ahead.

50:22:48 C Roger. Relay to Houston. Our ECS Quantity - our ECS O<sub>2</sub> Quantity is 46 percent. Do they recommend that I open the valve, please?

50:22:58 CC ECS Quantity 46 percent. Did they recommend that you open the crossfeed?

50:23:04 C That is affirmative.

50:23:17 P These darn hooks, Tom.

50:23:18 C What's wrong, Gene?

50:23:19 P Can't get the tether back on.

50:23:23 C Can't get it out?

50:23:24 P Can't get it on.

50:23:31 C Is it harder than what we did on the simulator.

50:23:32 P Boy!

50:23:34 C What's wrong, Gene?

50:23:36 P If I can make the hooks, I'll be all right.

50:23:39 C Are you getting the hooks attached to your umbilical ring?

50:23:41 P Yes.

50:24:01 CC Gemini IX, Tananarive.

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50:24:04 C Roger. I heard Houston. The answer is negative.

50:24:05 CC Very good.

50:24:10 C Okay. You still working on hooking these hooks up?

50:24:12 P Yes.

50:24:14 C Okay. Just take your time hooking it up.

50:24:16 C Here comes the moon up full ahead. A good moon shot - -

50:24:17 CC Gemini IX, contact Tananarive. ... read at 46 percent ... Is that correct?

50:24:25 C Tananarive contact. This is Gemini IX. That is affirmative. 46 percent.

50:24:32 C Tananarive. Tell them that we have to use considerably higher rate to keep the Pilot cool.

50:24:39 CC You have to use considerably higher rate to keep the Pilot cool. Is that correct?

50:24:44 C That's affirmative.

50:25:01 C What did you say, Gene?

50:25:03 P I've got my hooks on the ring.

50:25:10 C Okay, Gene. You got both of them hooked now?

50:25:14 P Just one of them.

50:25:25 C Yes. You should be starting to cool off, now that nighttime is here.

50:25:28 P I almost got this other bad one, but I can't get it.

50:25:32 C What's wrong? It's hard to hook?

50:25:37 P The umbilical is flying all over the place and the ... Tom.

50:25:51 C Okay. Just take your time on it, Gene. Take your time.

## CONFIDENTIAL

50:25:58 C ... your umbilical to ...

50:26:10 P I can't get the tether hooked on this cargo.

50:26:20 C Why, are the rings too small?

50:26:22 P No. They're just too hard to get at.

50:26:27 C Roger. Just take your time. We've got plenty of time.

50:26:29 P I've got the 125-foot hook on, Tom. I'm tempted to leave the other one for awhile.

50:26:31 C Okay. Just leave it. Go ahead.

50:26:33 P I'm going to leave it.

50:26:34 C Go ahead.

50:26:36 C Okay. The next item: inspect AMU battery cases and verify RCS handles in stowed position.

50:26:49 P Check.

50:26:53 P Okay. Battery cases are GO.

50:26:55 C Okay.

50:27:01 P RCS handles stowed.

50:27:10 P And that one's stowed.

50:27:11 C Okay.

50:27:14 C Okay. Install attitude controller arm, and verify all six positions.

50:27:29 P Okay. It's going to be a bad one.

50:27:39 P Oh, shucks!

50:27:44 C It's worse than under - under simulation.

50:27:46 P You can't - can't get two hands in there.

50:27:57 P Oh, you bad one.

CONFIDENTIAL

50:27:59 C Get it yet?

50:28:00 P No.

50:28:03 P In l g you float up and your stops just won't quite  
hack it.

50:28:08 P I've got to rest a minute.

50:28:09 C Okay. Take your time.

50:28:13 C If you can't get enough force there to get the  
thing to pull down out of that slot -

50:28:33 C Any luck yet, Gene?

50:28:34 P No.

50:28:41 P Yes. I've got it.

50:28:42 C Got it. Good show!

50:28:58 C We've got to turn all six positions. You have to  
pull the other one.

50:29:03 P Okay. Let's go.

50:29:04 C Okay. Let's unstow the translational controller and  
check it at all four positions.

50:29:19 C How are you doing, Gene?

50:29:22 P Getting there, Tom.

50:29:23 C Good.

50:29:39 C Still working on the translational controller,  
right?

50:29:41 P Yes. Coming up to it now.

50:29:49 C I can tell you're heated back there. ...

50:29:50 C Got her?

50:29:51 P Yes.

## CONFIDENTIAL

50:29:52 C Good show, Gene!

50:29:53 C Okay.

50:29:54 P Wait a minute. It's not all the way down.

50:30:03 P Okay.

50:30:08 C Okay. ...

50:30:09 P Who said this visor wouldn't fog up?

50:30:10 P Is it fogging on you?

50:30:11 P Yes.

50:30:12 C Okay.

50:30:14 C Understand visor is fogging. Okay. Next break, attach those temperature sensors if you can see them.

50:30:24 C You're going to have the moon back there in just a minute.

50:30:27 P Okay. I've got the temperature sensors on. I had them both on, and one fell off.

50:30:29 C Okay. Attach - unstow and attach to the controller arm in the following order: Oxygen hose - -

50:30:40 P I've got to take a rest, Tom.

50:30:41 C - - Take your time, Gene.

50:30:44 C We're not in bad shape at all.

50:30:49 C You'll have the moon up in just a minute back there and that should be able to help you.

50:30:56 P Phew! Okay. Read - what's the first one, oxygen?

50:31:03 C Oxygen hose.

50:31:05 P I've got plenty of light.

50:31:06 C You've got plenty of light.

CONFIDENTIAL

50:31:09 P It's the tendency to float up out of these stirrups that gets to you.

50:31:10 C Okay.

50:31:15 C Restraint harness.

50:31:17 P Wait a minute.

50:31:22 P Here's the oxygen hose. You can't bend down here like you can in 1 g.

50:31:29 C I'll say. Yes.

50:31:46 P I'm working up a good heat load, I'll tell you.

50:31:48 C Yes. I can imagine.

50:31:51 C I think the worst part is over there, isn't it?

50:31:56 P You son-of-a-gun.

50:31:58 C What are you working on, the restraint harness?

50:31:59 P Yes.

50:32:22 P Okay. I've got one side of it. Let me get the other side.

50:32:32 P The other visor's - visor's fogging up all over the place.

50:32:36 C Go to HIGH RATE if you have to, Gene.

50:32:38 P I am HIGH RATE.

50:33:03 P Okay. I've got the other side.

50:33:04 C Okay. ... next is electrical umbilical.

50:33:10 P I'm really fogging up, Tom.

50:33:11 C Take your time.

50:33:17 P Real good.



## CONFIDENTIAL

## CARNARVON

50:33:22 C Houston, Gemini IX.

50:33:27 C Carnarvon, Gemini IX.

50:33:32 P Okay.

50:33:51 C Hey, we have Hydrogen Pressure of ...

50:33:58 C Prepare to this ... read ...

50:34:01 CC Carnarvon is standing by.

50:34:05 C Roger. ... is zero.

50:34:09 C Full ...

50:34:14 C The gage isn't open yet so let's see what happens.

50:34:18 C It's ... open ... now.

50:34:29 C Zero ...

50:34:50 C Affirmative.

50:35:02 C ... Gemini has ... of 00 ... the Oxygen valve's been reading 02 ...

50:35:19 CC Give them another call, Bill.

50:35:37 C ... up ... no good.

50:35:48 C Peroxide is still 455. Temperature is good.

50:35:50 C How does the oxygen pressure look?

50:35:51 P Still opening the valve.

50:36:08 CC Carnarvon is standing by.

50:36:10 P Okay. It's open.

50:36:11 C Roger.

50:36:14 C Okay. You've got the Oxygen valve open?

CONFIDENTIAL

# CONFIDENTIAL

229

50:36:16 C What do you read on oxygen pressure?

50:36:18 P Wait till I get back down there.

50:36:34 P The oxygen reads about 7,500 and the nitrogen is up around 3,000. I can't quite read it.

50:36:40 C Okay. So it looks like we're in good shape then, right?

50:36:42 P Yes.

50:36:44 C Okay. Mode Selector switch to MANUAL and VOX switch to VOX.

50:36:46 P There, that way?

50:36:48 C Okay. Release the nozzle extensions.

50:36:56 P Okay. Nozzle extensions are released.

50:36:57 P There's Number 1.

50:36:58 C Okay.

50:36:59 P Boy, is this fogging - this visor's fogging up!

50:37:01 C Is it?

50:37:03 P Yes. Here's Number 2.

50:37:04 C Roger. Okay.

50:37:06 C H<sub>2</sub>O<sub>2</sub>. T/M Selector switch is BACKPACK.

50:37:12 P BACKPACK.

50:37:15 C Okay. Turn left 180 degrees and back into the AMU.

50:37:20 P Tom, we've got the Battery switch to GO.

50:37:22 C Okay. Main Power switch ON.

50:37:24 P Okay. Main Power switch is ON. The lights are ON and we've got power.

50:37:32 C Okay. H<sub>2</sub>O<sub>2</sub> T/M Selector switch to BACKPACK, right?

# CONFIDENTIAL

## CONFIDENTIAL

50:37:36 P That's affirm.

50:37:37 P Boy, I'm fogged up. My pressure - my pressure reading is fogged up, my visor's fogged up and I'm in high-flow.

50:37:43 C Okay. Just turn it - can you see at all, Gene?

50:37:46 P Yes. I can see.

50:37:47 C Okay. Turn around 180 degrees and back in the AMU and relax.

50:37:53 C Carnarvon, Gemini IX.

50:37:54 CC Go ahead, IX.

50:37:56 C Okay. He's fogging real bad and we have to use high-flow to keep the fogging down to minimum and the attitude controller arms and the maneuver controller arms presented far more difficulty to us in zero g than they did in the simulation. The big problem now is his thrust gage is fogged and his visor is fogged and we're just taking it easy here.

50:38:20 CC Roger.

50:38:22 C Okay, Gene. How we doing?

50:38:27 P I don't know. I'll let you know.

50:38:34 P Well, believe it or not, I think I've gotten turned around.

50:38:44 C Carnarvon, Gemini IX. If you read, Houston, our ECS O2 Pressure is 42 percent. 42 percent.

50:38:54 CC Say again.

50:38:56 C Roger. Houston, our ECS Quantity is 42 percent.

50:38:58 CC Understand.

50:39:05 P Boy!

50:39:07 C How are you doing, Gene?

CONFIDENTIAL

# CONFIDENTIAL

231

50:39:08 P Really fogged up, Tom.

50:39:10 C Okay.

50:39:15 CC That quantity is right on the money, Tom.

50:39:17 C Okay. He has to use higher rate to keep from fogging quite a bit.

50:39:29 C Okay. Let me know when you're ready to position it. Are you in the AMU now, Gene? All squared away?

50:39:39 P Let me take another look.

50:39:41 C How much can you see out of that fogged up visor?

50:39:43 P Oh, I can see in spots. I guess I'm in, Tom.

50:39:48 C Okay. It says position tether to avoid tangling. I don't know whether you can do that or not.

50:39:53 P Yes. I did that already.

50:39:56 C Okay. ELSS Power circuit breakers coming OPEN, Gene.

50:40:03 C MARK.

50:40:04 C ELSS Power circuit breaker OPEN.

50:40:05 P Okay. I guess the light went off. I didn't even know whether it was on.

50:40:08 C Okay. Verify the availability of AMU electrical umbilical and change from Spacecraft to AMU electrical systems. Now do you want to hang on and get rested before you do that?

50:40:20 P How are we doing on time?

50:40:23 C We're about 3 minutes behind on a 10-minute schedule.

50:40:27 C That's right. Just sit there and rest, Gene. You just take it easy. If we're going to have any trouble with visibility on loosening electrical

# CONFIDENTIAL

## CONFIDENTIAL

parts, let's just take our time.

50:40:36 C I'll leave the decision up to you whether you want to change that ... let's take a rest.

50:40:46 P Roger. We're at ceiling and laying here sideways.

50:40:48 C Yes, I can imagine.

50:40:53 C You have it on still in high-flow?

50:40:58 P Still reading about 3.9, Tom.

50:41:00 C Okay. Good.

50:41:03 C How is the suit temperature, pretty hot?

50:41:05 P It's warm enough.

50:41:06 C Okay.

50:41:08 P Remember now, I've only got one tether hook connected; that's a 125-footer.

50:41:12 C Yes. You're still connected to the umbilical, though?

50:41:14 P Right.

50:41:20 C Carnarvon, Gemini IX.

50:41:22 C We had a lot of difficulty hooking up those two - those tether hooks and working up a heat load so the only one we have hooked up is the 125-footer. It's still hooked to the umbilical.

50:41:32 CC Carnarvon understands.

50:41:44 P I'm just sitting here resting a minute, Tom.

50:41:46 C Take your time, Gene.

50:41:48 C Is the visor starting to clear?

50:41:50 P If I don't breathe.

50:41:56 P But I don't recommend that.

CONFIDENTIAL

# CONFIDENTIAL

233

50:42:03 CC Carnarvon's coming up on LOS, Gemini IX.

50:42:10 P Okay, Tom. I'll go ahead and make the electrical changeover.

50:42:11 C Roger. Carnarvon. We're going to make the electrical changeover. He's had a little bit of a rest and our ECS O<sub>2</sub> is 41 percent. Relay that on to Houston so they can make a recommendation to us when we hit Canton.

50:42:24 CC We're real happy with that, Tom.

50:42:27 C Okay. Real good.

50:42:29 P Okay, Tom. Here comes the electrical changeover.

50:42:32 C Okay.

C We'll go back to the electrical umbilical ...

C Houston, Gemini IX.

CC Houston is here, Gemini IX. We're reading you pretty weak. Go ahead.

CC Gemini IX, Houston. Go ahead.

C ... computer ...

50:59:04 C Very good.

50:59:13 C ...

50:59:19 C Hello, Houston. Gemini IX.

50:59:23 CC Gemini IX, Hawaii.

50:59:24 C Roger, Hawaii. Would you relay to Houston for me?

50:59:27 CC Roger. Go ahead.

50:59:29 C We had about 4 or 5 times more work than what we anticipated and the Pilot's visor is completely fogged over, nearly frozen into him. I'm having him stay there and just relax. Also, our communications are very poor. He has a lot of garble.

# CONFIDENTIAL

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Every transmission I can barely read. Also, the attitude controller arm malfunctioned completely. If the situation doesn't improve - also, he's having trouble getting the restraint harness hooked-up ... call it NO-GO on the AMU. We'll stay here and rest for awhile. If he gets them pulled up we'll take a good look at it. If it does clear up right away, we'll go back to the first ... electrical umbilical and call it NO-GO on AMU. Over.

51:00:17 CC Roger. Copy.

51:00:19 C Relay that to Houston.

51:00:20 CC Roger.

51:00:30 C See if you can get the reading on the umbilical.

51:00:33 CC Say again, Gemini IX.

51:00:35 C Very good, Hawaii. Go.

51:00:40 CC Were you calling, Gemini IX?

51:00:42 C I was talking to the Pilot.

51:00:43 CC Roger.

51:00:45 C The Pilot has already made the electrical connection to the AMU.

51:00:54 CC Roger. Copy. He has made the electrical connection to the AMU.

51:00:58 C That's affirmative. That's the only connection he has made and he's fogged over completely.

51:01:04 CC Roger. I'll relay this to Houston.

51:01:06 C When the sun gets back there, also - his communications to me are very poor and garbled.

51:01:11 CC Roger.

51:01:14 C Right now getting ... to the back and hoping for less fog.

CONFIDENTIAL

51:01:18 CC Roger.

51:01:37 C Gemini IX to Houston. Better check the right-hand hatch. It is weak. It's fairly free to move for the first couple of degrees.

51:01:50 CC Roger. You say the right hand hatch moves freely?

51:01:53 C Right. ... of course it moved freely when it became nearly closed.

51:02:02 CC Roger. Understand.

51:02:05 C Okay, Gene. How are you doing?

51:02:09 C ... up about 25 degrees.

51:02:28 P Okay. ... just let me relax.

51:02:37 C Well, can you see out at all? Can you see out at all, Gene? Okay. ... be okay. Okay. This is your chance ... Okay. You can't get anywhere. I'll tell Houston NO-GO. Still fogged up and can't get the arm controller unstowed on the ... When you can see enough, switch back to the Spacecraft electrical umbilical.

## HAWAII

51:03:29 C Hawaii, Gemini IX.

51:03:31 CC Gemini IX, Hawaii.

51:03:32 C I'm giving a No-GO for AMU. Pilot's fogged up completely. The AMU transmitter is garbled. I can barely read it. The attitude controller arm will not unstow to the proper position and I want him to switch back to the Spacecraft electrical umbilical.

51:03:49 CC Okay. We have that.

51:03:52 C He had to spend 4 to 5 times more energy than what we had ... experience at zero g in the airplane.



## CONFIDENTIAL

51:04:01 CC Roger. Understand. And Houston agrees with the NO-GO.

51:04:04 C Roger.

51:04:12 C Roger. We've also been working with one light. We have one EVA light good and only one pen light good.

51:04:44 C Roger. Hawaii. Gene said to pass on that he hated to do it but he doesn't have any choice and neither do I.

51:04:49 CC Roger. We understand.

51:05:18 C Let me know when you get ready to switch back to the electrical umbilical.

51:05:20 P I'm on it now. I'm going to try to get out of this thing now, if I can.

51:05:28 C Okay.

51:05:33 P I'm still fogged up.

51:05:37 C Did you read us, Hawaii, on our transmission?

51:05:42 CC Roger. We copy.

51:05:44 C Roger. He's had a little difficulty getting out of the AMU. He's still fogged up. He's ... Spacecraft electrical umbilical.

51:05:50 CC Roger. We copy.

51:05:59 P Okay, Tom. I'm unfogging in the middle a little bit. Okay. You better turn off the attitude control systems, I guess. I'll try and come around the adapter.

51:06:20 C Okay. Cannot open it.

51:06:21 P I'm facing it, and I cannot get it open.

51:06:24 C Cannot get it open. ... Okay. It's a NO-GO. ...

51:06:33 P Okay. Wait a minute, Tom. I want to try one more time.

CONFIDENTIAL

# CONFIDENTIAL

237

51:06:36 C Oh.

51:06:39 C How's the fogging, Gene?

51:06:41 P Still about 75 percent fogged.

51:06:43 C Okay.

51:06:45 P Okay, Tom. I do have the outer ... doors open now.

51:06:49 C Well, what do you want to do? Do you want to call it quits?

51:06:52 P I'm still fogged up. I don't know what I can get out of it.

51:06:55 C Okay. Come on out of it.

51:07:14 C Turn it off ...

51:07:23 P ...

51:07:53 C ... Do you want to come on inside or do you want to wait out there a little while? ...

51:08:09 P ...

51:08:44 C ...

51:08:54 P It's still fogged up.

51:08:56 C Okay.

51:09:00 CC Gemini IX, Houston standing by.

51:09:03 C ... Houston. We got Gene back in the hatch. He's still completely fogged up.

51:09:08 CC We're with you, Tom.

51:09:11 C ...

51:09:17 P ... Get some of this stuff in here and stay in here for a minute and see what happens.

51:09:24 C Okay. Why don't you just stand there and relax for awhile, Gene? Let me know when you get unfogged.

# CONFIDENTIAL

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51:09:32 P ...

51:09:45 P Sorry about that AMU.

51:09:46 C Yes.

51:09:49 P ... Take her around again so we could have seen.

51:10:02 C ... unfogged, Gene? Okay, Houston. Sun is up pretty high overhead and Gene is still fogged over. How do you read?

51:10:12 CC Roger. We're reading you loud and clear now, Tom.

51:10:14 C Okay. Hated to call it quits with that AMU but we had no choice.

51:10:20 CC Roger. We concur.

51:10:35 P ...

51:10:38 C Still fogged?

51:10:39 P Still about 50 percent fogged over.

51:10:42 C Roger. ...

51:10:43 P Did you get this?

51:10:51 C What about for the nighttime? ... In case you go into a fog we can take you ... if you do we're going to cut it off.

51:10:58 P How much time do we have to go to nighttime?

51:11:00 C We have ...

51:11:03 P Okay. I'm either re-fogged or I'm staying fogged right now.

51:11:12 CC Tom, this is Houston. You might have Gene check his emergency bottle pressure when he gets a chance.

51:11:19 C Roger. We will ... he's on HIGH RATE, Neil, and he is still foggy.

CONFIDENTIAL

51:11:26 CC Roger. When he can see well enough to read that bottle pressure, we'd like to get an idea what it is.

51:11:31 C Roger. Will do.

51:11:35 C Gene, can you read your emergency ... pressure on the check?

51:11:40 P Yes, about 6800.

51:11:43 C Houston. Did you copy? 6800.

51:11:45 CC Roger. Very good.

51:11:49 P Hey. Looks like there's an airplane in the contrails down there.

51:11:53 C Could you see real well?

51:11:54 P I can see right through my nose but I can't see in front of my eyeballs.

51:12:01 C We're coming up on IA. I've got the frost-free type.

51:12:12 CC That's some kind of a first, Tom.

51:12:15 C ... I'll have to agree with you.

51:12:19 P Hey, Tom, what's that guy doing with the Texas driver's license out there on the California highway?

51:12:24 C Which freeway?

51:12:26 P There. That motorcycle.

51:12:28 C The Golden Gate Freeway?

51:12:29 P Yes.

51:12:34 C Okay, Gene. How much can you see out now?

51:12:36 P Okay. My left eye I can see through, and I can see over my nose. The whole right side and extreme left side are still fogged.

## CONFIDENTIAL

51:12:43 C Okay, Houston. He can just see through his nose and one little hole in his left eye. And I can see in the mirror he's pretty well fogged over to about 60 to 70 percent of his visor.

51:12:53 CC Roger, Tom. And we're copying Gene pretty good too.

51:12:57 C Okay.

51:13:02 P I am going to take a little rest, Tom.

51:13:04 C Okay. You take a little rest now. In fact, we'll be passing right over LA.

51:13:21 C Okay, Gene. How about feeling the hatch. Put your finger there and feel the hatch ... to see what it's like.

51:13:27 P ...

51:13:29 C Okay, Bill. ...

51:13:33 CC Roger, Tom.

51:13:50 P ... let me sit here for a minute.

51:13:56 P The left side has cleared up pretty well. ... pressure gage is 80 percent fogged over. I can see it's still reading somewhere around 4 psi.

51:14:51 P Hey, Neil. You might tell everyone down there that's concerned, that I'm sure sorry about this.

51:14:59 CC Houston, Tom. Tell him we're not concerned a bit.

51:15:04 C Well, it was the only way we could play it and the safest way.

51:15:09 P I'd like - while I'm standing here I might brief you. The umbilical did hang out, by the way. One armrail was deployed, the footrail was deployed, the left armrail and the umbilical guard were not deployed. They were hung up with the ... I was able to get back there without any problem. I say it was just hanging loose and I sprung the ... loose and the armrail came out and the umbilical guard came out, so I was ... away. I had the

CONFIDENTIAL

# CONFIDENTIAL

241

starboard EVA light back there. I had one pen light. I think one of the problems was that just before sunset I bet my backpack must have gotten over 100 degrees because it was really hot. And right after it got cold, my visor started fogging up and I could do part of the things with the fogged visor, but I just couldn't see enough of what I was trying to get at when the visor fogged completely over.

51:16:11 CC Tom, we copy.

51:16:13 P And it's still not clear. I guess about 40 percent fogged right now on the eye level.

51:16:21 C It looks just about clear here. The sun's pretty high anyway.

51:16:27 P I'd like to ask Houston ... just stand here now. My pressure gage is still fogged and it's around 4 psi.

51:16:36 C Okay. One thing, how about getting the docking mirror back in.

51:16:42 P You want that out of there?

51:16:44 C Yes. We want it out of there.

51:16:46 P Okay. I'll go up and get it.

51:17:26 C You bet.

51:17:37 P I'm slipping forward, forward to do it. I am coming up on it. ... hold it, please ...

51:19:53 C ... phase we've got about 31 minutes left. If you've fogged up, I don't want you to try it.

51:20:12 P I'm fogging up again and working here in high-flow.

51:20:15 C Houston, Gemini IX.

51:20:17 CC Houston, Go.

51:20:19 C Okay. Just started happening . He started fogging up when he went up to retrieve the docking bar.

# CONFIDENTIAL

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I'm going to make the recommendation that we retrieve this before sunset.

51:20:28 CC Roger. We agree with that, Tom.

51:20:31 C Okay. He is still out there taking pictures, basically. Except we're having trouble closing the hatch and we're going to go ahead and close the hatch.

51:20:48 C ...

51:20:54 C Okay. Come on. (Laughter)

51:20:57 P That's what I need - a ballet lesson.

51:20:58 C ... no, legs together - legs together ...

51:21:09 P ...

51:21:29 CC How are you doing?

51:21:30 C We're doing good, Gene. I've got the ... umbilical ... Probably take us to sunset.

51:21:43 C Houston, Gemini IX. Give our regrets to Dr. Knapp. I see just no other way to play it.

51:21:48 CC Roger.

51:21:50 P Did you get through?

51:21:51 C Yes.

51:22:32 P ... forward ...

51:22:37 C There you go.

51:22:43 P ... Tom. I'm really fogged up. I guess I'm getting more fogged up.

51:22:49 C Okay, Houston. He continues to get more fogged up just from standing here. We may have green glass.

51:22:56 CC Roger. We concur.

51:22:58 P Okay, Tom. How does it look down there?

CONFIDENTIAL

# CONFIDENTIAL

243

51:23:07 C Pretty good.

51:23:21 P Tom.

51:23:22 C I'll see you, Gene.

51:23:25 P Okay. There it goes.

51:23:34 C Still fogging, right?

51:23:36 P Still fogging.

51:23:37 C Still fogging on HIGH RATE? 39 percent. Okay.

51:23:43 CC Houston. Roger.

51:23:46 C Put your left foot forward.

51:24:01 P ...

51:24:04 C ...

51:24:11 CC Hey, Tom. Did you bring the EVA camera in?

51:24:15 C We did, Neil. I've got it in.

51:24:16 CC Okay. Good.

51:24:18 C You look pretty good.

51:24:28 P Boy! Am I tired!

51:24:30 C He's starting to fog now, Houston.

51:24:38 P ... at about a ...

51:24:55 P I'm starting to fog up at eye level. Hey, Houston, ... this way. My face towards you.

51:25:19 P I don't think I'll make it that way.

51:26:53 C Houston. That hatch was harder to close than we thought it would.

51:26:56 CC Roger. We've got about 5 minutes to Antigua LOS, Tom.

# CONFIDENTIAL



## CONFIDENTIAL

51:27:02 C ... film ... they let it go.

51:27:33 C We are having a very big deal getting this hatch closed. I don't think I'd like to do this again, would you?

51:27:46 P No, I wouldn't.

51:28:45 C Let's take a rest before closing the hatch.

51:28:50 CC Roger. We got about 3 minutes yet and then there will be 8 minutes before you get to RKV.

51:28:56 C Roger.

51:29:01 P ...

51:30:00 P Is that the last one?

51:30:03 C ...

51:30:20 P Message for you.

51:30:23 C Okay, Houston. We've got the hatch closed.

51:30:27 CC Good work, Tom.

51:30:30 P ... place for it but ...

51:30:39 C Don't push it. It's got to be pulled.

51:30:52 P ... don't pull anymore.

51:30:53 C Whooppee!

51:30:54 P Is that it?

51:30:55 C Yes, we've got the hatch locked.

51:30:58 CC Good, Tom. Glad to hear that. You've got about a minute yet and then it's about 4 minutes until RKV.

51:31:05 P Let's pressurize this cabin, Tom. Close the valve.

51:31:07 C Okay.

51:31:25 P I think we got the last one now. Is that it?

CONFIDENTIAL

# CONFIDENTIAL

245

51:31:42 P What are you doing?  
51:32:06 C Okay, Houston. Cabin pressure starting up. 1/2 inch.  
51:32:13 P Okay. Put the ...  
51:32:17 CC Houston copies.

## ROSE KNOT VICTOR

51:35:23 C ... fog pusher.  
51:35:26 P Oh, man! Solid, Tom!  
51:35:31 CC Gemini IX, RKV. Standing by.  
51:35:34 C ... to RKV. Our cabin pressure is 2 and building up.  
51:35:39 CC Roger. Copy.  
51:35:40 C Just thought you would be interested in knowing that the Pilot was completely fogged over.  
51:35:46 CC Roger.  
51:35:48 C ... and he's still fogged over.  
51:35:51 C Pressure is up to about 2-1/4.  
51:35:54 CC Roger.  
51:35:58 P RKV, I hope you were smiling.  
51:36:03 CC Roger. We are.  
51:36:06 P So are we, believe it or not.  
51:36:11 C I think we've learned a lot. ... learned a lot.  
51:36:14 CC That's affirm.  
51:36:20 P I can tell you one thing, Tom - that once I was back there, my chances were about 50-50.

# CONFIDENTIAL

## CONFIDENTIAL

51:36:31 C More like 70-30.

51:36:44 P Back there I couldn't see anything, and the sunlight on one side, and visor was so fogged I couldn't see anything.

51:37:05 P ... I could hear you, but only in spots.

51:37:10 P Did you push the audio tone?

51:37:20 P I could read you loud and clear when I could read you, but I could tell you were talking and I didn't get anything at all.

51:37:26 CC Gemini IX, RKV.

51:37:28 C RKV, Gemini IX.

51:37:30 CC Roger. Would you turn your ECS O<sub>2</sub> Manual Heater ON?

51:37:37 P That's Cabin Pressure, ON, Tom.

51:37:43 P Let me know when ...

51:37:52 C Cabin pressure 3.13.

51:37:55 CC Roger.

51:38:07 P Darn. I should be able ...

51:38:43 C Okay ... RKV, Gemini IX. We're up to 4 psi.

51:38:48 CC Roger. Copy.

51:38:54 P RKV, Gemini IX.

51:38:56 CC Go, IX.

51:38:58 P You might ask Houston whether or not they have any more D-14's planned for us. If they do, we'd better just take the first one and take a look at it because I broke off the antenna.

51:39:08 CC Roger.

51:39:29 P We're pressurized, Tom. I can't get the visor open.

CONFIDENTIAL

# CONFIDENTIAL

247

51:39:38 C Yes. I would.

51:39:41 P Or take it off. One or the other. I can't get it off.

51:39:57 CC Gemini IX, RKV. We'll have LOS in about a minute.

51:40:01 C Roger.

51:40:09 P RKV, it's going to take us quite a while to clean house here.

51:40:18 CC Say again, please?

51:40:20 P It'll take us a few hours to clean house here.

51:40:22 CC Roger.

51:40:51 C How are you doing?

51:41:56 CC Gemini IX, Houston standing by.

51:42:01 C Roger, Houston. Our cabin pressure is 5.5, and for your information, Gene fogged over completely during the Ingress Maneuver.

51:42:14 CC Houston copies.

51:42:15 C Okay. ... all squared away.

51:42:29 CC Houston copies.

51:42:49 C ... in the wrong direction.

## TANANARIVE

51:56:06 CC Gemini IX, Houston standing by, Tananarive.

51:56:10 C ...

51:56:17 CC Okay. We're having trouble talking to you over this station again. We'll be standing by.

51:56:21 C ...

# CONFIDENTIAL

## CONFIDENTIAL

52:02:07 CC Gemini IX, Houston. If you read, we're recommending, after you get the cockpit cleaned, that you have an eat period for the - about the next hour.

52:02:23 C Tananarive ...

52:30:37 CC Gemini IX, this is CSQ Surgeon. We have full-scale.

52:30:45 CC Gemini IX, this is CSQ Surgeon. We have all blood pressure, exercise. Give me a Mark.

52:30:52 P Roger.

52:30:53 P MARK.

52:31:11 CC Gemini IX, CSQ Surgeon. Your cuff is full-scale.

52:36:39 CC Gemini IX, Hawaii.

52:36:42 P Go ahead, Hawaii.

52:36:43 CC Okay. We have three small items for you, if you have the time.

52:36:47 P To write down?

52:36:48 CC Negative.

52:36:50 P Okay. Go ahead.

52:36:51 CC We'd like for you to check RCS Ring A No. 1 Pitch circuit breaker - see if it's CLOSED.

52:37:00 P It was OPEN.

52:37:02 CC Okay. We see it on the ground. And we'd like to verify the T/M switch in the REAL-TIME and ACQ AID positions.

52:37:09 P Okay. It's in REAL-TIME and ACQ AID now.

52:37:12 CC Roger. Would you go to the EXPERIMENT position on the Propellant Indicator switch and give us a read-out pressure and temperature on H<sub>2</sub>O<sub>2</sub>?

52:37:21 P Okay. It looks like we bang a few switches around here, don't we? It's reading 460 right now -

CONFIDENTIAL

# CONFIDENTIAL

249

pressure - and 65 degrees Fahrenheit temperature, and our question is probably what you've been considering. Do you want us to get rid of it or not?

52:37:40 CC They'll talk to you over the States about that.

52:37:43 P Okay.

52:37:49 P Any circuit breakers we kicked around?

52:37:51 CC We don't see any from here.

52:37:57 CC Everything else looks real good.

52:37:59 P Okay. Thank you.

52:38:01 CC We'll be standing by.

52:38:06 P You can tell Houston they'll probably see our water consumption go up rapidly.

52:38:10 CC Say again.

52:38:12 P You can tell Houston they'll probably see our water consumption go up rapidly.

52:38:15 CC I don't doubt it.

52:39:28 C Hawaii, Gemini IX.

52:39:30 CC Gemini IX, Hawaii.

52:39:31 C Roger. I'd like to have somebody give us an accurate readout on our latest Propellant Quantity, please..

52:39:36 CC Roger.

52:39:41 CC We'd like an on-board Prop Quantity readout.

52:39:45 C Okay. By knocking out the parallax, I'd say 4 percent, maybe 3.

52:39:53 CC Roger.

52:40:03 CC Gemini IX, Hawaii.

# CONFIDENTIAL

## CONFIDENTIAL

52:40:05 C Go.

52:40:07 CC They'll be giving you some updates on these quantities over the States.

52:40:12 C Roger.

52:43:04 CC Gemini IX, Hawaii. We have 1 minute to LOS and standing by.

52:43:08 C Roger, Hawaii.

52:43:55 CC Hawaii has LOS.

## CALIFORNIA

52:44:49 CC Gemini IX, Houston.

52:44:54 C Houston, Gemini IX. Go.

52:44:56 CC Roger, Tom. We'd like to have from Gene his best recollection of the configuration of the AMU at the time he left; that is, in terms of connections, tether, arms, the valves, et cetera.

52:45:20 P Houston. Can you read us okay? We're reading you garbled.

52:45:23 CC Okay. We're reading you loud and clear, so go ahead.

52:45:26 P Okay. I'm not sure of all you asked for, but when I went back there after I closed the hatch, I went back over the top all the way down to the handrails and - -

52:45:35 CC Stand by.

52:45:37 CC Stand by.

52:45:39 P - - Extend the attitude controller arms.

52:45:41 CC Stand by.

52:45:42 P Saw the umbilical guard come over the back of the

CONFIDENTIAL

adapter, so I figured that they did not extend.

52:45:47 CC Stand by.

52:45:51 CC Do you read it? Do you read, Houston?

52:45:54 P Houston, do you read?

52:45:55 CC Yes. What we want to know, Gene, is the configuration of that AMU as it is now. Right now, as best you know it.

52:46:02 P Okay. The AMU, as it is now, has the Oxygen valve, OPEN, Hydrogen valve, OPEN. On my gage, I have 80 percent peroxide quantity. The Battery switch is ON.

52:46:26 CC Okay. How about the arm and the tether?

52:46:37 C Houston, Gemini IX. You're coming in broken.

52:46:40 CC Roger. We got all that. We'd like to have the condition of the arm, the umbilical and the tether - the restraint.

52:46:51 P Down.

52:46:54 P The attitude control arm is up and locked. It's in the flyable position. The tether was discarded, and it cleared the Spacecraft.

52:47:09 CC Roger.

52:47:21 CC Say again the position of the left arm

52:47:26 P The left arm is down. Not locked, but all the way down.

52:47:31 CC Roger. All the way down.

52:47:32 CC Now, how about any other electrical or hoses?

52:47:41 CC Are they still curved to the pack, or are they loose or what?

52:47:46 P The tin hose is Velcroed to the - to the arm controller. The restraint harness on both sides is



## CONFIDENTIAL

Velcroed to the arm controller, and the electrical connection, I believe, is Velcroed. I think I've got it back down but I cannot verify it.

52:48:06 CC Roger. We have all that.

52:48:14 CC Okay. For your information, the - your on-board quantity indicates 20 pounds of fuel. The source pressure indicates 28 pounds of fuel. The ground equations indicate 35 pounds.

52:48:30 P Roger. We've got that. Thank you.

52:48:32 CC Okay. And I've got a maneuver update when you're ready to copy.

52:48:36 C Roger. Houston, we have that. Is that fuel only or is that fuel and oxidizer?

52:48:42 C Fuel only.

52:48:43 C Roger.

52:48:44 CC We got a - we'd like to do this Orbit Shaping to get your true anomaly in the right place, if you'd agree with that.

52:48:51 C Roger. That sounds real good, Neil.

52:48:54 CC Okay. We'll have that. When you're ready to copy, I'll give it to you.

52:48:58 C Okay. Want to do that right away?

52:49:00 CC It will be at 53:41.

52:49:04 C Okay.

52:49:06 CC That's about an hour from now, over Tananarive.

52:49:09 C Okay. We've got the Platform all Alined here and we are in good shape. Stand by one and we'll copy it.

52:49:15 CC Okay. I can tell you first it's going to be a 25-foot-per-second burn. We'd like to monitor your - have you monitor your VW tank, your reserve tank, during the burn, and if it starts to go down, you

CONFIDENTIAL

stop your burn at that point.

52:49:34 C Shoot for 25 feet per second or if VW tank starts down, we'll stop the burn.

52:49:38 CC That's right. And let us know how many feet per second you burned.

52:49:41 C Roger.

## GUAYMAS

52:49:52 C Go ahead with the GET.

52:49:53 CC Okay. GET B: 53:41:35; Delta-V, 25; burn time, 31 seconds; yaw 180, pitch 0; Address 25, 90250; Address 26, zero; 27, zero; aft thrusters; Retrograde. Go ahead.

52:50:27 C Roger. GET Burn: 53:41:35; Delta-V, 25 feet per second; Delta-T, 31 seconds burn time; yaw 180, pitch 0; Address 25, 90250; 26 and 27, zeros; aft thrusters; Retrograde Maneuver.

52:50:52 CC That is correct and you can turn your crossfeed ON.

52:50:59 C Crossfeed coming OPEN.

52:51:09 CC Our current approach is not to jettison AMU unless we feel for some reason we have to.

52:51:18 C Roger. We were going to ask you about that. What was your recommendation?

52:51:22 CC Well, we're sure going to keep it for awhile. I want to watch these pressures and I'm sure you'll be watching them too.

52:51:29 C Roger.

52:51:32 C Bob, we learned a whole lot out of the EVA. It was a real worthwhile exercise.

52:51:35 CC Yes. We certainly agree with that.

## CONFIDENTIAL

52:51:40 C In fact, I wished you would have gotten some ... data on the previous one.

52:51:44 CC Say again.

52:51:50 C I said I'd wished you'd have been able to get this data on the previous one.

52:51:52 CC Yes. But it looks like you got a lot of the data we would've got.

52:51:55 C Yes. I think it was still a real fine exercise. We hated to give up the AMU portion of it, but we did do some good umbilical evaluation and we got some pictures. We also got a lot of thermal inputs to give back to the people.

52:52:11 CC Yes. We can see that it was very valuable. You know the EVA bottle is empty.

52:52:19 P Thanks a lot.

52:52:20 C Thanks a lot, Dick.

52:52:22 P Still batting 500, Dick, but a lot smarter.

52:52:26 CC Yes. You did good work, friend.

52:52:29 P You don't know how much.

52:52:31 CC Yes, I do. I was watching you.

52:52:36 CC The Surgeon told me.

52:52:39 C Houston, Gemini IX. Would you give us a time hack, please?

52:52:41 CC Roger. It will be 52:45.

52:52:45 CC MARK.

52:52:48 C Right on.

TEXAS

52:53:20 CC Okay. Tom, we're expecting this AMU pressure to go

CONFIDENTIAL

# CONFIDENTIAL

255

up and it may go up over 500. Then it's conceivable that you could get a light here sometime along the way.

52:53:37 C Okay.

52:53:38 C We'll think on it, Neil.

52:53:40 CC Okay. We're going to be thinking about it some more on the ground here.

52:53:46 C Roger.

52:54:14 CC Looks like, Tom, that we are not planning to jettison the AMU, even if that light does come on. However, in the configuration you have it - we don't see any reason why we won't be able to jettison it if, for some reason, we have to.

52:54:33 C Roger.

52:56:18 CC Houston is about a minute from LOS

52:56:22 P Roger, Neil. We'll be set up and we'll make the burn according to instructions.

52:56:28 CC Right. The guys down here think you made a real good show there, Gene.

52:56:34 P Like I say, I feel I'm only batting 500 but that's better than nothing.

52:56:40 CC We're with you.

52:56:45 P Tom thinks I need some ballet lessons.

52:56:48 CC (Laughter)

52:56:52 CC You want me to give them to you?

52:56:56 P Not exactly.

ROSE KNOT VICTOR

53:08:54 CC Gemini IX, RKV.

# CONFIDENTIAL

## CONFIDENTIAL

53:08:55 C RKV, Gemini IX.

53:08:57 CC Roger. Could you do a fuel cell purge for us at this time?

53:09:02 C ...

53:09:12 CC We'd like to have you do a Section 1 purge and then a Section 2.

53:09:46 P Okay, RKV. I'm with you now. You want Section 1 first?

53:09:51 CC That's affirm.

53:10:01 P Okay. Purging hydrogen, Section 1.

53:10:04 C Roger. We understand.

53:10:20 P Purge hydrogen in Section 2.

53:10:22 CC Roger.

53:10:25 P Fuel cells have been working real good up here.

53:10:28 CC They're running real beautiful down here. This is the nicest I've ever seen fuel cells running.

53:10:41 P And we're on the oxygen purge, Section 1.

53:10:43 CC Roger.

53:10:46 P They've been holding very well here. Voltages have been holding on good. Very well balanced.

53:10:52 CC Yes. I've never seen one before that ran this close on the current. Hold really in there.

53:11:22 CC Gemini IX, RKV. When you get a chance, could you give us a water gun count, please?

P Roger. Water gun now reads 2706.

CC Roger. Copy 2706.

P We're starting on this ATDA Command Signaling.

53:12:47 P Gemini IX. We're now purging oxygen, Section 2.

CONFIDENTIAL

# CONFIDENTIAL

257

53:12:51 CC Roger. Right with you.

53:12:53 P And the AMU tank pressure is holding.

53:12:56 CC Roger.

53:14:38 CC Gemini IX, RKV. Just for your information, we turned the L-Band beacon OFF on the ATDA and we also turned ACQ lights ON on the ATDA. We are pretty well powering the ATDA up.

53:14:53 P Roger. Can you give us an idea where it is in our relation now to where it will be after our burn?

53:15:00 CC Roger. Stand by.

53:15:16 CC Last information we have here on the ground is that - Houston's going to get a better look at it now - is that it should be a slightly higher orbit than what you have. It should be about - was 185 miles long.

53:15:32 P Okay. Thank you.

53:15:43 CC Okay. Would you place your Quantity Read switch to the - let's see - FUEL CELL O<sub>2</sub> position?

53:15:54 P Okay. FUEL CELL O<sub>2</sub>.

53:16:20 CC Flight just advised that the ATDA is 160 miles behind you.

53:16:26 P Roger. And the transponder's ON?

53:16:29 CC That's affirm.

53:16:31 P Okay. We'll do a little interrogating here.

53:16:33 CC Roger. We notice you have your radio on.

53:16:36 P Okay. Will you give us FUEL CELL H<sub>2</sub> quantity, please?

53:16:40 CC FUEL CELL H<sub>2</sub>.

53:16:48 CC Okay. You can go back to ECS O<sub>2</sub>.

# CONFIDENTIAL

## CONFIDENTIAL

53:16:52 P ECS O<sub>2</sub>.

53:17:12 CC You can even turn it off if you want to, or however you want to leave it.

53:17:29 P This is IX. How is the hydrogen quantity holding up?

53:17:34 CC Our transducer has failed and we're not getting any indication down here on the ground on it so - -

53:24:03 C Gemini IX recording at 53:23:59. We have radar lock-on with the ATDA, 159.12 miles.

53:24:10 P Solid.

53:24:11 C Solid lock.

53:24:16 P Looks like the angle's down - that can't be, can it?

53:24:23 P Down about minus 4 or 5 degrees.

53:24:31 C ... radar in attitude ...

53:24:33 P What?

53:24:34 P Yes. I am in radar now. Look's about 4 or 5 degrees.

53:24:39 P And that says 12 feet per second.

53:24:41 C That's about right.

53:24:45 P Pitch down about 5 degrees, 159.17 miles. We just lost lock. Just got lock on again. Pretty good, you know it?

53:25:15 P Yes. We're opening, Tom, at 2 feet per second now, but that may not be the right reading.

53:25:24 P It's 159.20 miles.

53:25:31 P Just lost lock. Just got lock back. 5 feet per second, opening.

53:25:39 P Lock. We're losing, gaining, getting lock,

CONFIDENTIAL

intermittently. Most of the time it's on and now it's off again.

53:25:52 P Remember, this has to be stowed back up here, Tom. There's no use for the camera box S-12.

53:26:04 P This is Gemini IX. GET at 53 hours, 26 minutes. We have radar lock on the ATDA, 159.28 miles. Pitch down about 3 degrees and we're opening at 2 feet per second.

53:26:30 C Do you have your swizzle stick over there?

## TANANARIVE

53:30:27 P ... Gemini IX.

53:30:32 CC Gemini IX, this is Houston. How do you read?

53:30:35 P Gemini IX. We read you loud and clear. A lot of noise going on ...

53:30:41 P ...

53:30:48 CC Gene, you're coming in very garbled. I've got some dope for you, though. Your H<sub>2</sub> quantity is around 40 to 46 percent and is okay. We're getting a Flight Plan update ready and we'll send it up at Hawaii. Over.

53:31:05 P Roger. Understand. Flight Plan update at Hawaii and H<sub>2</sub> quantity is okay.

53:31:11 C And what about ...

53:32:16 P Gemini IX. At GET of 53 hours 32 minutes. We're opening at 2 feet per second. Range is now 159 miles, 159.92 miles - at 10 feet per second.

53:39:04 P This is Gemini IX. It's now 160.88 miles. Range-Rate is 17 feet per second. It's 53:39 and we're standing by to make our burn.

53:41:14 C Okay. We have just burnt. Coming into 53:41.



## CONFIDENTIAL

53:41:28 P Okay. I'll watch the regulated pressure and time to burn.

53:41:36 C 32, 33, 34, 35, BURN.

53:41:48 P Regulator pressure is holding, Tom. 13 feet to go; 10 to go; starting to drop.

53:41:59 C 290 to 330. Did you make it?

53:42:07 P Okay, Tom. Burn was 29 seconds and we're at 295. She dropped to 290 so she's - I think we're right at that point.

53:42:23 C Good show! We've got 25 feet per second before that.

53:42:26 P Want to interrogate 81, 82? Says 3 feet per second, Tom, 82 down. We want to go 3-feet-per-second down. Still got 2 to go.

53:42:50 C Let it go. What do we have?

53:42:56 P Okay. At that point.

53:43:00 C ...

53:43:14 P Will you give me that book to write on? That one right there is good enough. That little one where the burn is.

53:43:24 C This one?

53:43:26 P I know it. 81 is plus 6, 82 is 2.2, 80 is minus 1.3. Okay?

53:43:56 P See. It's just starting to go down, Tom.

53:44:02 P Okay. We've made our fuel nominal burn and - to the ATDA at 53:46, it's 161.34 miles. Range-Rate is 5 feet-per-second, closing at the moment. It appears that the needles show pitch down about 2 degrees.

53:44:40 C Okay. Now I know the rates.

53:44:48 P I think that's got it. Anytime you say you're ready.

CONFIDENTIAL

# CONFIDENTIAL

261

53:44:52 C Go.

## COASTAL SENTRY QUEBEC

53:53:28 CC Gemini IX, CSQ CAP COM.

53:53:32 C Okay, CSQ. Go ahead.

53:53:34 CC Roger. Have you completed your maneuver?

53:53:36 C Roger. Maneuver has been completed on time. We hit the ... times just to the west of ... pick up residuals ...

53:53:49 CC Roger. Understand. Can you give me an OAMS Prop Quantity reading, please?

53:53:54 C OAMS Prop Quantity I have now indicated as zero.

53:53:59 CC Roger. Would you give me your OAMS Reserve Tank pressure?

53:54:02 C Roger. We have now 295.

53:54:06 CC Roger. Understand. We have nothing further for you at this time.

53:54:12 P CSQ, Gemini IX.

53:54:14 CC Go ahead, Gemini IX. CSQ.

53:54:16 P Residuals on that burn were Address 80 minus 0013.

53:54:22 CC Roger.

53:54:24 P 81 is 00006; 82 is 00022.

53:54:35 CC Okay. Would you give me an Address 81, please?

53:54:38 P Roger. 81 was 00006.

53:54:43 CC Roger. Understand. I copy.

53:54:45 P And just ... of burn there was an indication that the OAMS regulated pressure was dropping down to

# CONFIDENTIAL

## CONFIDENTIAL

about 285 to 290. Now it's up again to around 290.

53:55:00 CC Roger. Understand.

53:55:07 C CSQ, Gemini IX. Are we supposed to get a Flight Plan update at Hawaii?

53:55:11 CC That's affirmative, Gemini IX.

53:55:13 C All right. Roger.

53:56:26 P CSQ, Gemini IX.

53:56:29 P We've been reading the L-Band on the ATDA for about 15 minutes. The Range-Rate is very slow. We were opening prior to our burn and then we started to close very slowly and we are approximately 162.75 miles with a Range-Rate of plus 26 feet per second.

53:56:49 CC Roger. Understand.

53:56:52 P The lock-on is pretty solid. Occasionally it drops out, but it looks like a pretty good lock-on.

53:56:57 CC Roger.

53:57:30 C If you will give us a Mark prior to LOS, I'll give you another Range and Range-Rate ...

53:57:36 CC Roger.

54:00:16 CC Gemini IX. On my Mark would you give me a Range and a Range-Rate, please?

54:00:21 C ... Roger.

54:00:27 CC MARK.

54:00:32 P On your Mark, Range is 164.72 miles.

54:00:43 P Range-Rate is 51 feet per second, overtake.

54:00:46 P 51 feet per second.

54:00:48 CC Roger. Understand.

54:01:00 CC Okay. You are just about to leave us here,

CONFIDENTIAL

# CONFIDENTIAL

263

Gemini IX. We show you as GO as you are going over the hill.

54:01:10 P All right. Roger.

## HAWAII

54:11:19 CC Gemini IX, Hawaii.

54:11:21 C Hello, Hawaii. Gemini IX.

54:11:23 CC Roger, I have a Flight Plan update for you.

54:11:28 C Roger. Be ready to copy in 1 minute.

54:11:29 CC Roger.

54:11:45 C Hawaii, Gemini IX. Go.

54:11:47 CC Roger. 54:38:34 through 54:47:28: photographs of South America; 70mm Hasselblad, 80mm lens; strip chart; weather and film permitting. These should be nadir photographs.

54:12:18 C Roger.

54:12:21 CC 55:30 - stand by. 54:57:00. This is an S-1. Start with Milky Way exposures. Take two exposures of each of the four horizons starting north, then west, south and east. 55:30:00: Load re-entry module tape; then power-down except for rate gyros.

54:13:11 CC Stand by, Gemini IX.

54:13:24 CC Gemini IX, Hawaii. That time for loading the re-entry module should be approximately 55:46:37. That will be Hawaii acquisition on the next revolution. Also, over Hawaii, on the next revolution, it's 55:46:18 crew status report. S-11: 56:49:17; Sequence 02, southern horizon only. Use Acamar for yaw attitude. CSQ: 57:04:02; PLA update. RKV 58:00:00; purge fuel cells and Cryo Quantity read-out. 57:30:00 through 58:30:00: eat period. 58:30:00 through 66:30:00: sleep period. 66:30 through 67:30:00: eat period. 66:38:52 over

# CONFIDENTIAL

## CONFIDENTIAL

Carnarvon: purge fuel cells and Cryo Quantity readout. That's all.

54:15:38 C Roger, Hawaii. Could you give us the first times for the South America strip chart?

54:15:43 CC Roger. 54:38:34 through 54:47:28.

54:15:59 C Roger.

54:16:03 CC We'd also like for you to think about the weight update of the Spacecraft at this time. Such items that you have jettisoned and the amount of the O<sub>2</sub> and the ELSS and such as this.

54:16:15 C Roger. The ELSS has approximately 1 pound of oxygen left in it.

54:16:25 CC Roger.

54:16:28 C And the jettison items were estimated to be approximately 2 pounds.

54:16:36 CC The number of items jettisoned should add up to around 2 pounds.

54:16:44 P That's affirm. That's internal from the Spacecraft and, of course, there was the S-12 steering and the ...

54:16:59 CC Roger. I copy.

54:18:03 C Hawaii, Gemini IX.

54:18:05 CC Gemini IX, Hawaii.

54:18:07 C I'd like to give you the status of the D-14 antenna.

54:18:09 CC Okay.

54:18:11 C Okay. I broke it about two-thirds of the way down. I actually broke the casing; it seemed to snap - semi-snap back in place. Apparently there is a cable or a line through it. It's not spring-loaded like the UHF nose antenna. It may or may not work. I don't know whether you want to try it.

CONFIDENTIAL

# CONFIDENTIAL

265

54:18:34 CC I believe they've canceled the rest of the D-14 experiment.

54:18:37 C Okay.

54:18:41 CC We're at LOS minus 1, Gemini IX.

## ROSE KNOT VICTOR

54:45:10 CC Gemini IX, RKV standing by.

54:45:12 C Roger, RKV. We're taking a quick nap.

54:45:14 CC Roger.

54:49:15 CC Gemini IX, RKV here. For your information, I'd like to have you transfer about 4 pounds of water to the water boiler. That's 134 count. Start that over the CSQ.

54:49:25 C 104 counts of water to the water boiler.

54:49:28 CC 134.

54:49:30 C 134.

54:49:31 CC Affirmative.

54:49:38 CC RKV. That's 132 counts.

54:49:41 CC Correction on that, Gemini. That's 132 counts.

54:49:50 C Roger.

54:50:24 C RKV, this is Gemini IX. We'll start drinking quite a bit here, too.

54:50:28 CC Roger.

54:50:29 C You want 134 - 132 more than what we have now.

54:50:33 CC That's affirmative.

# CONFIDENTIAL

## CONFIDENTIAL

## TANANARIVE

54:50:55 CC Gemini IX, Houston.

54:50:57 C Roger, Houston. We're in the middle of a ...

54:55:32 P Hey, Tom! I think that would have been off.

54:55:36 P ... be 8.

54:55:40 P When I tell you, pitch up, Tom.

54:55:46 P Pitch up.

54:55:54 C Got the other one going?

54:55:57 P Yes. I do now. Don't thrust.

54:56:26 C Okay. Go on to the other horizon.

54:56:46 P Turn the ... back on.

54:56:49 C Sure glad that little fuel will do all of this.

54:56:59 P I am too.

54:57:06 P What's next on the agenda?

54:57:34 P Have to load the computer, so you might want to bring the computer up in between times. I can be here.

54:57:40 P Hawaii, 55:46.

54:57:42 C Get most of it okay?

54:57:45 P Yes.

54:58:02 C Don't have a ... How's that one?

54:58:08 P Very well; you've got an open.

54:58:10 C An open.

54:58:12 P No, left, don't you?

CONFIDENTIAL

# CONFIDENTIAL

267

54:58:14 C No, to the right.

54:58:52 P Okay. Anytime.

54:58:54 C Okay. Looks good where ...

54:58:56 P Okay. ...

54:58:57 C All set?

54:58:58 P Anytime you say.

54:59:00 C Hit it.

54:59:12 P When I tell you, you can damp the rates, then you can damp some more. You're drifting down and left. Don't do anything yet.

54:59:34 P Okay. You can thrust. Okay. Don't do anything.

55:00:17 C Go on for the next one, if you'd like.

55:01:11 P ... over CSQ. Should work with that off the West Coast.

55:01:14 C Yes. I know but that's - -

55:01:17 P Before you get to Hawaii?

55:01:20 C - - We'll never be able to transfer there.

55:01:26 P When do we get there?

55:01:34 C Load Module 4 down there.

55:01:39 CC We're having an S-11 down here. ...

55:01:49 P Crew status at Hawaii?

55:01:57 CC Okay. They're there.

55:02:05 P You will even get EVA. I'll tell you because - -

55:02:07 C You ready?

55:02:32 P - - When I tell you, roll left.

# CONFIDENTIAL



## CONFIDENTIAL

55:03:24 C Okay.

55:03:27 P You got a big spot of lightning in that, right at the last.

55:03:31 C What did you call it?

55:03:33 P Big spot of lightning.

55:03:42 C All kinds of bumpers right now. Boy!

55:04:04 C The sun's coming up.

55:04:06 P Look at the lights down there.

55:04:10 P Australia, you suppose?

55:04:12 P Let's see now- no we must be --

55:04:23 C ...

55:04:24 P - - Another city. Look at that one down there.

55:05:14 P We have everything hung up on it, Tom.

55:05:20 P We are over Africa, South Africa.

55:05:25 C This is Gemini IX.

55:05:27 P Up a little, Tom. No, you're all right. I guess you're at 40 degrees. That's good. Anytime, when you're ready.

55:05:54 C Okay. I've got it.

55:05:56 CC Gemini IX, Houston.

55:05:59 C Roger, Houston. We're in the middle of an S-1 photograph right now.

55:06:05 CC We have a procedure for you, if you're ready to copy it.

55:06:13 C Stand by one. We're still on Experiment S-1.

55:06:16 CC Roger.

CONFIDENTIAL

# CONFIDENTIAL

269

55:06:20 P Is this Gemini CAP COM?

55:06:29 P Go right.

55:06:30 C Okay.

55:06:32 C Procedure on 1. I wonder - -

55:06:36 CC This is Houston standing by. We'll send the procedure up at CSQ.

55:06:41 C - - Roger.

55:07:04 P Okay.

55:07:07 P Don't you want to get any Milky Way pictures with this?

55:07:13 P We've got 1 to CSQ.

55:07:17 C Milky Way is straight up the pipe.

55:07:22 P Yaw left, to the left.

55:07:26 C Yes.

55:07:27 P Yaw left more - more than your nose. Yaw to the left a bit.

55:07:42 P Keep going left.

55:07:51 C See up there.

55:07:53 P Yes. I can see it.

55:07:54 P If you stop - stop it all.

55:08:03 P Then you'll have to tell me when you're stopped.

55:08:09 P Don't let it yaw any more. You're yawing too far.

55:08:11 P Too far. Oh, you're all right yet.

55:08:13 P Go.

55:08:14 C Okay.

# CONFIDENTIAL

## CONFIDENTIAL

55:08:27 P Still rolling left a little bit.

55:08:30 C Balls of fire!

55:08:46 P Okay. Go up the Milky Way now, if you can, Tom. No matter whether it's perfect, just go up to window level on the horizon. It doesn't make any difference what roll you have, just so you hold it. Any time.

55:09:52 C Okay.

55:09:54 P Go up some more, if you can.

55:09:55 C Want me to go from here?

55:09:57 P Just go up to that level. Go up about 30 degrees high - 10 degrees high, I mean.

55:10:22 P Okay. Stop it somewhere in there.

55:10:27 C Really shooting it up.

55:10:30 P I've taken 2, 4, 6, 8, 10 and I ruined the first one; 2, 4, 6, 8, 10.

55:10:38 P Ready?

55:11:09 P Go on up some more.

55:11:17 C S-12.

55:11:27 P Yaw just a little right, you're coming too far. You seem to be about 320.

55:11:40 P We're not getting any because of the moon. Can't get anything here because of the moon. Might be able to get the rest of them on another one.

55:11:50 C Okay.

55:11:51 P You ready?

55:11:55 C Okay.

55:12:25 P Okay. We can't go any higher. The moon's up there.

CONFIDENTIAL

# CONFIDENTIAL

271

55:12:28 P How many have we taken of the Milky Way?

55:12:30 C Three.

55:12:32 P It was four.

55:12:33 C Want me to take some more of the horizon while we're here?

55:12:38 P That was four at eight to 12 ...

55:12:49 P Where is the tape?

55:12:51 P You've got this all on tape?

55:12:54 P Tape's been on, I guess, and you want to tell them what we're doing?

55:12:57 P We have taken two pictures, S-1; two pictures, northern horizon, western horizon, southern horizon and eastern horizon. Two pictures of the Milky Way; one of northeast horizon and we have taken four pictures - that's a total of 12 and I ruined the first shot. Pictures ...

55:13:20 P Couldn't go any further on the horizon because the moon was up there toward the beacon.

55:13:38 C Want to pitch down some more?

55:13:44 P Yes, a little bit.

55:13:49 P Two more pictures of the eastern horizon.

55:13:52 C One more picture of eastern horizon.

55:14:11 P And knowing now that - with my experience, EVA, I can appreciate that it would have not only been difficult, but impossible to hold this camera for 30 seconds in any one direction.

55:14:33 C S-1 is completed with 18 exposures. ... 56.

55:14:44 P Have you got the Platform Alined so we can load Module 4?

# CONFIDENTIAL

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## COASTAL SENTRY QUEBEC

55:28:24 CC Gemini IX, CSQ CAP COM.

55:28:25 C CSQ, Gemini IX. We're loading water into the water boiler.

55:28:29 CC Roger. Could you give me the gun count prior to the start?

55:28:33 C It was 2715.

55:28:35 CC Roger. And that's a 132-gun count?

55:28:39 C Roger. When they told us that, we started at 2175. We drank quite a bit. We are now at 2747.

55:28:49 CC Roger. Understand. I have a module-loading procedure for you when you're ready to copy.

55:28:57 C Okay. ... busy - we're loading the water boiler right now.

55:29:07 CC Roger. Understand.

55:29:09 C ... regular procedure ... on-board.

55:29:14 CC Roger. This is a new procedure, Gemini IX.

55:29:30 C Okay, CSQ. Go ahead.

55:29:31 CC Roger. Step 1: Switch to CATCH-UP; clarify IVI's do not drive. Step 2: set small numbers in IVI's. Step 3: insert into the MDIU, Address 25, all zero; Address 26, all zeros; Address 27, all zeros. Step 4: push START COMP IVI's, 23 to zero. Step 5: switch to PRELAUNCH. Step 6: at 55:46:00 load Module 4, be in automatic. Step 7: switch to RE-ENTRY. Step 8: verify Computer Run light stays OFF. Step 9: switch to PRELAUNCH. Did you copy?

55:31:27 C Roger. Repeat Step 8, please.

55:31:30 CC Step 8: verify Computer Run light stays OFF.

55:31:42 P Roger. I'd like to read it back to you real quick.

CONFIDENTIAL

# CONFIDENTIAL

273

55:31:44 CC Go.

55:31:45 P Number 1: switch to CATCH-UP; clarify IVI's do not drive. Set small numbers in IVI. Set 25, 6 and 7, all zeros. Step 4 is push START COMP; IVI's to zero. Step 5 PRELAUNCH. At 55:46:00, load Module 4, be in the automatic. Step 7: switch to REENTRY. Verify Computer light is OFF. Step 9: switch to PRELAUNCH.

55:32:15 CC That's affirmative. And at this time I have a Flight Plan update.

55:32:21 P Go ahead with the Flight Plan update, and if we have any anomaly prior to Step 6, should we continue or not?

55:32:28 CC Stand by one.

55:32:35 CC Stand by. We're checking on it. We'd like to know what the anomaly is before we proceed past Step 6.

55:32:45 P We would like to know what the anomaly is before proceeding.

55:32:49 P Roger. Understand. Go ahead with your update.

55:32:51 CC Roger. Final: CSQ at 57:04:00; computer, PRELAUNCH. 46-1: TR and computer update. Did you copy?

55:33:17 P Roger. Copied.

55:33:23 P CSQ: 57:04:00; computer, PRELAUNCH. 46-1: TR and computer update.

55:33:29 CC That's affirmative.

55:33:32 CC We have nothing further for you at this time. We show you as GO.

55:33:35 P Roger. And one question. Is this procedure prior to loading the normal weights for the ATM - is it about this START COMP business that we had the other day?

# CONFIDENTIAL

## CONFIDENTIAL

55:33:45 CC That's correct.

55:33:46 CC That's affirmative.

55:33:47 P Okay. Thank you.

55:34:41 P CSQ, this is Gemini IX.

55:34:44 CC Go, Gemini IX.

55:34:45 P First, Step 1 - you want me to insert the numbers in the IVI's when I go to CATCH-UP?

55:34:53 CC Stand by.

55:35:09 CC Roger. They want to insert the small numbers in the IVI's to see if they will go to zero.

55:35:14 P Roger. They do go to zero. I understand you want me to verify that they do not drive.

55:35:20 CC That's affirmative.

55:35:22 P Okay. We'll try it right there.

55:35:27 CC Stand by.

## HAWAII

55:46:55 CC Gemini IX, Hawaii

55:46:56 P Go, Hawaii.

55:46:57 CC Roger. Has either of you started on the oral temperature yet?

55:47:02 P That's affirm.

55:47:03 CC Roger. I have a little change to that ATM loading procedure, if you'd like to copy it.

55:47:11 P Go ahead.

55:47:12 CC Okay. We'd just like for you to go to CATCH-UP on the computer and then pick up the sequence you

CONFIDENTIAL

# CONFIDENTIAL

275

already have at Number 3.

55:47:23 P Roger. Understand.

55:49:01 CC Gemini IX Pilot. We have a good temperature on you.

55:49:09 P Gemini IX. Roger. And I'm - starting on Step 6 of loading the ATM.

55:49:15 CC Roger. We've been following you down here.

55:49:20 CC You're looking okay at this time.

55:49:22 P Affirmative and everything GO and we'll get the rest of the crew status report as soon as the Pilot can talk.

55:49:28 P Correction, Command Pilot.

55:49:29 CC Roger. Understand.

55:49:34 CC Okay. We have a good temperature on the Command Pilot.

55:49:54 C Hawaii, Gemini IX. A - water count now 2764 and we will continue drinking until we have 2847 on the gage.

55:50:05 CC Roger. You have 2764 at this time; you'll continue until 2847.

55:50:11 C Roger. That's to give us that 132 squirts into the water boiler.

55:50:13 CC Roger.

55:50:17 CC Have you both been drinking about the same or have you - or is one of you thirstier than the other?

55:50:22 C Gene has had about three times as much of that since EVA.

55:50:28 CC About three times as much since EVA?

# CONFIDENTIAL



## CONFIDENTIAL

55:50:29 C Roger.

55:50:38 CC Okay. Have you got any food to report?

55:50:43 C Yes. We've each had one meal today and we don't know what to do with the second one.

55:50:47 CC Roger.

55:51:02 CC How do you feel today compared with yesterday, when you started to delay the EVA until today - as far as tiredness and physical feeling?

55:51:11 C Roger. We feel a lot - we feel about twice as good. We both had to kind of - little drowsy yesterday.

55:51:20 CC Roger. Understand.

55:51:26 P Hawaii, it appears that Module 4-Alpha is going on in.

55:51:29 CC Roger.

55:52:14 CC Gemini IX, Hawaii.

55:52:15 P Go, Hawaii.

55:52:16 CC Okay. I have a small Flight Plan update for you if you're ready to copy.

55:52:21 P Go ahead.

55:52:22 CC Node: 55:18:51; Rev 35, 77.0 degrees east; right ascension, 19 hours, 01 minute.

55:52:46 P Roger. We got the Node: 55:18:51; Rev 35, 77 - correction, 77 degrees east; right ascension, 19 hours, 01 minute.

55:52:56 CC Roger. That's affirmative.

55:54:24 CC Gemini IX, Hawaii. We have 1 minute until LOS.

55:54:29 P Gemini IX, Roger.

55:55:03 CC Hawaii has LOS.

CONFIDENTIAL

# CONFIDENTIAL

277

55:55:05 P Hawaii, Gemini IX. Module 4-Alpha has been loaded and - -

ROSE KNOT VICTOR

56:20:57 CC Gemini IX, RKV. Would you go to the EXPERIMENT position and give us a readout on the Hydrogen Peroxide Pressure and Temperature, please?

56:21:06 P Roger. We're there now and it's 60 degrees and 480 psi.

56:21:12 CC Roger. Copy 60 degrees, 480 psi.

56:21:18 P Confirm, and the - ATM - the computer is loaded and it's been verified with 4-Bravo and verified ... and verified 4-Alpha and 4-Bravo.

56:21:30 CC Roger. Very good.

56:21:33 P All procedures checked out.

56:21:35 CC Roger.

56:21:42 CC You're looking good from down here. We have nothing further for you.

56:21:46 P Roger. Thank you.

56:26:50 CC RKV has about 1 minute until LOS.

56:26:54 P Roger.

C This is a continuation of the debriefing on the Rendezvous. One trimming will complete the first Rendezvous. Radar was turned on and lock was obtained intermittently at 130 miles. It occurred at 120 nautical miles. After NSR we started to make data points throughout TPI. They showed that we were fairly ... in our effort ... 12-1/2 miles.

P The altitude -

P Altitude ... shows us to be 12-1/2 miles. Our

# CONFIDENTIAL

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Delta, Delta-R held between 47 and 49, .49 negative, and this is based on a 50-nautical mile range. Just exactly a little over 2-1/2 miles difference, so we're probably 200 miles to the ATDA. Apparently so. We went into Rendezvous mode, as I recall from the charts.

- C And we noticed a computer problem prior to where the START COMP was initiated.
- P That was just on the last burn after the N<sub>SR</sub> burn and ...
- C The computer was switched to Rendezvous mode.
- P After eight data points, we got a solution with the computer. Our first solution was expected - but then the computer also reacted just as if you had pushed START COMP, giving us an unauthorized solution. We re-initialized the computer and went into the Rendezvous mode. We went down through eight data points and picked up another solution, at which time the computer and the IVI's gave us a solution as did the MDIU and the computer. We had selected that as our Open Loop. This happened twice in a row.
- P The number of data points that was required to get a Closed Loop solution - and if we switched into the Closed Loop at 3:20:05 GET, we would get a solution that would - the computer would give us, if this START COMP cycle repeated itself, that solution would be our TPI Solution based upon - going into RENDEZVOUS. We caught this - we were in the process of talking about this when ... rendezvous 03:20:17 or 12 seconds late. We - what am I doing - Okay.
- C ...
- P The solution that the computer came up with turned out to come right down on the predicted time of Point Charlie or Point C, from the charts. However, this time was a little bit off. I am not sure how this time coincides with the back-up time for TPI burn, but the Closed Loop did come up just as predicted and with this automatic START COMP function

CONFIDENTIAL

it had, the solution was apparently a good solution. The time, as far as we are concerned for TPI, however, differed with the ground. The computer gave us 26 forward, 8 up and 4 right. It differed with the ground. The ground gave us 26.7 forward, 1.3 up, 2.2 right. Backup correction, 24 forward and 0 up/down. We went with sort of a compromise because we did not like the 8 up from the Closed Loop at all and we did not have too much confidence in the computer.

P We went with 27 forward, 1 up and 2 right, which was basically a compromise between the ground and back-up solution. It looked good to us, which was our on-board back-up. Now one thing about the on-board and back-up rendezvous information. On both this and the other rendezvous, many times we were dependent on making corrections based on our radar angle and then the elevation angle. Wherever we could, we tried to take the two angles to get the Delta-Delta-R difference of ..., so as a result, we did compromise on this TPI and went with what appeared to be the ground solution.

C Okay. With respect to the lighting, approaching TPI. We first saw a speck of light that could be compared with about a fifth or sixth-magnitude star and it was in excess of 50 miles. The ATDA appeared in the darkness as about a zero-magnitude star. Continuing on, we made our first back-up solution measurement in 1 to 4 minutes after transfer into reflected sunlight, and the ATDA disappeared into darkness for approximately 5 minutes, so the overall condition from the ground with respect to the Phasing and the NSR was exactly on time.

P I might add that the Closed-Loop solution from the computer came right on time. The COMP light came right on the predicted time of my burn. In other words, I predicted back-up burn time accurately and my COMP light came on exactly on time. The reason we did not like the 8 up on Closed-Loop solution was that there was little or no ellipticity and it just didn't appear right to us. As it turned out, it was a good thing we did not burn it. The first correction obviously was initiated as Closed-

## CONFIDENTIAL

Loop. We decided to see what the Closed-Loop was going to give us on its first correction. It came up with 2 aft and 3 up as my back-up solution. We did get a Closed-Loop solution to go with it. Closed-Loop solution was 2 aft, 2 up and 3 left. My back-up solution said 3 aft and 4 up. They both tended to agree. Whether or not there was a difference in this optical sight angle, I don't know, but for some reason we did go with the Closed-Loop. It looked good to us. It even looked better to us than the back-up solution. It looked pretty poor to us on the basis of its own correction, because we did not burn the 8 up in TPI. On the third correction, which is back-up, I got 1 aft and 1 up. We burned zero on the fourth correction. Our insert correction gave 3 forward, 2 down; back-up solution 0 forward and 3 down. We burned, in Closed-Loop, 3 forward and 2 down. After that point, the corrections, we felt, were very small and the back-up solutions agreed with the Closed-Loop. We went Closed-Loop and came right up the pipe. We had very few LOS problems to control at all. They were all within boundaries and we had little or no braking problems at 1 mile. As I recall, we took off about 20 - which brought us down to somewhere around 20 feet a second and all the COMP ... must have been ...

C Immediately after going into darkness we saw the flashing light. The ATDA went into darkness at approximately 20 miles ... we immediately saw a flashing light. The flashing light stayed on for 15 seconds and disappeared. After this time, we would intermittently see the flashing light. As long as certainly 12 miles to 13 miles away, we could see a slight red light when there was no flashing and, as we progressed on, the ATDA finally came in the vicinity of the moon. The maneuver for the initial line of sight was held constant and was done with the moon, before we made the final correction to the right. The sky was lit up so brightly by the full moon that very little ... background could be seen. The ATDA from approximately 4 miles was in very brilliantly reflecting moonlight. We could see the flashing light and the RED, GREEN and AMBER lights at that time. There was a final brake at approximately 1/2 mile.

CONFIDENTIAL

We could tell that the cone lights were on and, as we approached within 1000 feet, everything looked in good shape on the ATDA since we could see the cone lights and a part of the ATDA. Then, as we closed in further, we could see the moonlight and extensions on the nose of the ATDA. It became very obvious, there in the moonlight, that the nose shroud had not jettisoned. The shroud was open like a set of jaws, approximately 30 degrees off, not ... Braking went very smooth and we had 58 percent fuel remaining at the end of the first run. Equal period orbit initiation at Omega 80 ... it was determined in real time that ... the ATDA was going ... orbit rendezvous. At this time we Alined the Platform ... made a good Platform Alinement and proceeded directly on top of the ATDA ... initial maneuver on time. As we fell behind the ATDA, of course, we could see the running lights, particularly the RED running lights on the ATDA. Approximately 13 miles, pardon me, up to approximately 8 miles in darkness ...

P The sextant practice that was to occur after separation, or 1 mile through 3 miles, was attempted but could not be done for a couple of reasons. At first we were at too steep an angle to acquire the horizon out of the Spacecraft window while we were boresighted on the target. In addition, seeing a target that was as bright and white as the ATDA was, it was impossible to see the target against the ground background. We discovered that it was very difficult during Rendezvous even up to as close, as I recall, a mile because we were coming in from above. ... so, as a result, none of the sextant practice was actually done because I could not acquire the target visually at all. I did get a sextant reading at 12 degrees to give us a back-up to our Horizontal-Adjust Maneuver. Nominal was 41:05, our time was 41:22. And then we got a GET of local horizon crossing of 45:20 and 45:33 was nominal. This gave us a Horizontal-Adjust maneuver of .1-foot-per-second forward and .2-foot-per-second out, which ended up in time to be 0 forward and .5 foot-per-second up. I decided we would not burn. Now, regarding Terminal-Phase Initiation, we were coming in real well at - Tom.

## CONFIDENTIAL

- C At this time we continued to track him on radar throughout this maneuver ... The ATDA was only 8 to 9 miles in front of us. It was impossible to see. We rolled to keep the sun from us. It became brilliantly lit in sunlight and I would estimate it was a maximum of about a zero-magnitude star at dawn. He grew in intensity all the way through the rest of the maneuver. It was very easy to see, a short time after sunrise.
- P I made a slight error at first. I took 47 degrees for my second angle instead of 43 degrees. As a result, I missed my whole transfer. I looked for a second angle first and of course, I missed the first angle. I was too late to go back. I didn't think it was worthwhile waiting for a sextant angle, then I regrouped and took the Delta-Theta that went with it, because I thought the delay too long. So what I did, I regrouped at that time and I took - I computed TPI from Delta-Theta ... I could have gotten a sextant reading of 8 degrees very easily. We initiated ... TPI slightly late at 114.29 and nominal is 112.51. We had to go with this method and then, plotting ourselves on the chart, started courses that seemed correct. Even though TPI was late, I felt that we caught it pretty well. Now the first correction, because TPI was late ... I again lost the sextant correction - because we'd gone past that sextant angle as a result of the late TPI - so I computed it again with Delta-Theta, from the ball and the time, and got 0 aft and 2 down. Now I was all prepared on the second correction. I got my sextant angle, but the second sextant angle was 80 degrees, and an 80 degree angle is almost impossible to get in the Spacecraft. Cramped far down in the left bottom corner of the window, I was not able to pick the horizon out. I feel that this correction went very good. I computed it with a combination of sextant angles and Delta-Theta and came up with the time and a Delta-Theta, but the correction was slightly biased or ended up to be a bad correction because of the last sextant angle. Delta-Theta was good, but the 80-degree sextant angle was bad. You just didn't have enough room for error up here, whether you held perpendicular to the horizon or not, and I think this was the difficulty.

CONFIDENTIAL

- P I came up with 2 down. I feel this correction probably should have been 0 or close to it. ... quite a bit of line-of-sight correction in the mode prior to braking. Like to talk about the lighting and braking, Tom?
- C Right. After TPI, the reflected sunlight continued to increase to a more brilliant light than the planets by the time that we were in ... 3 miles. There was no difficulty in seeing it. I used the optical sight out of the window optically for all the braking. At 1 mile the nose cone and the complete body of the ATDA was the size of the total of Agena. I tried braking at approximately - well, I would estimate  $3/4$  of a mile - continued in brake and arrived at stationkeeping position well before sunset. We made the Rendezvous in the inverted position. The terminal phase on up presented no difficulty whatsoever.
- P I personally feel that the reason we were so - could so ably see the target in reflected sunlight was that big white nose cone. It was silver with a dull burnished aluminum, was very dull and burnished where that white should have shown out there.
- C On the Rendezvous from above, we continued it in after the  $N_{SR}$  maneuver.
- P Closed-Loop solutions for the total velocity ... total velocity and we didn't get a repeat of START COMP cycle and  $T_I$  and  $V_T$  looked real good. Occasionally we'd get one about every fourth or fifth solution that came up that would be higher than the preceding one, but generally they came down in a fairly systematic order. We had a lot of faith in our Closed-Loop by the time it came. However, we saw ... ellipticity for about - let me see ... mile Delta-H. We were about 8 miles ... and then we were ... and then we were still going. We were still going up when we hit TPI and our computer gave out ... the pass over the RKV. I'll repeat what I was going to say. We noticed an ellipticity .. we were about  $1/2$  mile over our desired  $7-1/2$  miles. We started out about a  $1/4$  of a mile high and went up to  $1/2$  mile high. We then started coming back down and



## CONFIDENTIAL

we went through 7-1/2 miles in Delta-Delta ...  
all the way as high as ...

CC Ascension, AOS ...

P ... a 1/3 of a, 3/10 of a mile, 1/3 of a mile.  
But we got the Closed-Loop ... properly. The  
Closed-Loop gave us 19 forward and 4 down and  
I'd like to point out ... 1/2 forward and 3/10 up.  
... in the Closed-Loop gave us 2 left. We didn't  
like the down and at that time we left it ... to  
the ground so there were two things about the  
Closed-Loop we didn't like ... much more logical,  
so we went with 17 forward and 3 up, essentially  
the back-up solution for Terminal Phase Initiate.  
The COMP light came ON at 7:50, time 7:50, and we  
initiated a correction at 8 minutes. I predicted  
it to come on at 7:50, so we're pretty close there.  
Our first correction on back-up data was 0 forward  
and 3 down.

C Alined the Platform.

P Then we Alined the Platform at that time. Closed-  
Loop or Open-Loop back-up information ... the  
Closed-Loop gave us 4 aft, 1 up and 5 left. We  
burnt 4 aft, 1 up and 3 left. With the Closed-  
Loop, the up looked good on the basis of our  
initial transfer. Here again the computer - al-  
though we did not - ... the first correction gave  
us 1 up ... both the primary ... computer solutions  
are debatable, I believe. Like to talk, too, about  
our lighting, Tom.

C Now.

C Prior to transfer, we could see the - target flash-  
ing light and, suddenly, just before daylight we  
noticed a small light that grew in intensity. It  
was the brightest reflecting target we have ever  
seen. I would estimate that it was 4 to 5 times  
brighter than Sirius, against the earth's surface  
just before sunrise with reflected moonlight on it.  
We had this at 20 miles. As sunrise occurred, the  
lighting changed from moonlight into sunlight and  
the intensity of the target decreased all the way  
through. We finally came out over the desert areas,

CONFIDENTIAL

where we lost the target completely.

- P This is where it became extremely difficult to get good angles because we were going from bore-sight to radar and radar to - hey, Tom, I don't know exactly! they were not obviously really steady and some of our corrections ... but as I recall, we did not have visual contact until - correction, we were doing line-of-sight control and you were radar-boresighted and I think it was to a mile before we had it.
- C During this time we had reflected sunlight from the desert and I could not see my pattern on the optical reticle. There was no possible way to see the target. I tried to adjust the needles, which had fluctuated in somewhat of a previously prescribed manner. The Range-Rate needle was far in excess of nominal and continually fluctuating between 12 to 15 feet per second. I finally could see a faint speck in the distance, 3 to 3-1/2 miles. This was not ... by reticle. Finally, as we crossed the Red Sea, I could see you coming up on the white target, against a blue ocean, but 1 mile was approximately the maximum that we could see under this condition. And during this time the radar needles fluctuated back and forth ... We continued in to one-half mile, we got a good Range-Rate and the line-of-sight was going good ... Range-Rate to a negative value. For this we had to make a 7 to 10-foot-per-second positive forward thrust. At this time we continued on until we were stationkeeping.
- P The third correction back-up gave 2 aft and 2 down and then we could see rapidly that we were crossing angles. The fourth correction gave Closed-Loop: 2 forward, 10 down and 7 right; 1 aft, 5 down, and we burned. Apparently Tom could see errors developing, as I recall, from the ball. We burned a total of ... We went in on the basis of LOS at that point and we had quite a bit of line-of-sight control, which worked out fine. We had to force it down because our angles were crossing too steeply ... come up into the sun as I recall it was happening at that time. I think the one thing we ought to remember from this Rendezvous ... showed suddenly during the equal-period orbit was that when you're

## CONFIDENTIAL

looking down at daylight with an earth background, the target is almost impossible to see.

C Also, the motion that you experienced as you are down to a vertical position going across the ground is something phenomenal. The relative positions, even when you can see plainly, are very hard to ascertain; as is the job of looking at your Flight Director Attitude Indicator, optically tracking and also cross-checking your radar.

P As the target goes across the ground, it is impossible to try to pinpoint it against any terrain, looking down. It was just impossible to acquire it even after we thought we would. We might add that on our third day here today, we turned on our radar and got a fairly steady lock-out up through about 179 miles, at which time we changed our attitudes and did not follow it any further.

## TANANARIVE

56:42:37 CC Gemini IX, Gemini IX. This is Houston at Tananarive. We're standing by. We have nothing for you this pass.

56:42:46 P Roger. Houston, you're coming in loud and clear.

56:42:51 CC Roger.

56:42:54 P ...

56:42:57 CC Finally.

56:46:32 CC Gemini IX, this is Houston. We have 1 minute to LOS. Have a good night's sleep. Real good show, Gene.

56:46:42 C What was the last transmission ...

46:46:46 CC Roger. We have 1 minute to LOS. Have a good night's sleep. And a real good show, Gene.

56:46:56 P ...

CONFIDENTIAL

# CONFIDENTIAL

287

## COASTAL SENTRY QUEBEC

57:05:32 CC Gemini IX, CSQ CAP COM.

57:05:34 P CSQ, Gemini IX. Go.

57:05:36 CC Roger. I have a new  $T_R$  time for you.

57:05:39 P Go.

57:05:40 CC Roger. Transmitting  $T_R$ .

57:05:53 CC You're in sync, Gemini IX.

57:06:10 P Gemini IX is copying down and I'm ready to copy your PLA.

57:06:14 CC Roger. I have a load to transmit.

57:06:18 CC Roger, Gemini IX. I have a load to transmit. And you are in sync.

57:06:27 CC ...

57:06:30 CC MARK.

57:06:35 P Gemini IX has received the load.

57:06:44 CC Roger. We verify on the ground that your load is good. Stand by for a pass message. Area 44 - 46-1: GET RC, 71:56:47; RET 400K, 19 plus 49. Gemini IX, CSQ CAP COM.

57:07:20 P Go, CSQ.

57:07:21 CC Area 46-1: GET RC, 71:46:47; RET 400K, 19 plus 49. RET RV, 26 plus 39; bank left 50, bank right 60. Do you copy?

57:08:00 P Roger. 46-1: GET RC, 71:46:47; 400K at 19 plus 49; first bank at 26 plus 09, left bank 50, bank right 60.

57:08:13 CC Roger. ATMIV quantities: Core 03, 63906; Core 04, 34967; Core 65, 01766; Core 66, 34743; Core 07, 65417; Core 08, 40833; Core 09, 15294; Core 10,

# CONFIDENTIAL

## CONFIDENTIAL

02756; Core 11, 28500. Did you copy?

57:09:23 P This is Gemini IX. Roger. Got them all and I'll check them if there's any anomaly. I'll check back.

57:09:31 CC Roger. Understand. I have your PLA update for you.

57:09:37 CC Would like you to stay in PRELAUNCH until we tell you to switch.

57:09:46 CC Are you ready for the PLA?

57:09:48 P Go.

57:09:51 CC Area 38-3: 59:54:46; RET 400K, 19 plus 20; 25 plus 27. Area 39-D: 60:49:43; 20 plus 53; 23 plus 56. Area 40-2: 62:25:36; 20 plus 42; 25 plus 31. Area 41-2: 63:59:27; 20 plus 27; 25 plus 17. Area 42-2: 65:35:27; 20 plus 15; 25 plus 09. Area 43-2: 67:11:08; 20 plus 04; 25 plus 26. Area 44-1: 68:37:08; 20 plus 10; 25 plus 22. Area 45-1: 70:11:51; 20 plus 03; 25 plus 32. Bank angles for all areas: Roll left 85, roll right 95. Weather in all areas, good. Sep Maneuvers, none. Did you copy?

## HAWAII

57:23:17 C Hawaii, Gemini IX.

57:23:19 CC Gemini IX, Hawaii.

57:23:21 C Roger. We're sitting here going over things from Flight. What's our latest ...

57:23:27 CC Stand by and I'll get the latest.

57:23:30 P Gemini IX. Also, we didn't receive anything after 43-2 from CSQ.

57:23:35 CC Roger. I have the rest of that for you.

57:23:50 CC Gemini IX, Hawaii.

CONFIDENTIAL

# CONFIDENTIAL

289

57:23:52 P Go.

57:23:54 CC Okay. Your apogee, 157.5; perigee, 145.6.

57:24:09 P Roger.

57:24:10 CC Okay. Did you get all of 43-2?

57:23:14 P Roger. Got all of 43-2.

57:24:17 CC Roger. Stand by for - I have two more items.  
44-1: 68:37:08; 20 plus 10; 25 plus 22; and all  
the bank angles are roll left 85, roll right 95.  
The weather is good in all areas and there's no  
Sep Maneuver. 45-1: 70:11:51; 20 plus 03; 25  
plus 32. And that's all.

57:25:12 P Was that 45-1?

57:25:15 CC Roger. That was 45-1.

57:25:20 P Okay. We've got them all. We've got the bank  
angles and the weather. Thank you.

57:25:24 CC Roger.

57:25:33 P How long would you like us to leave the computer  
ON?

57:25:37 CC Stand by.

57:26:02 CC Gemini IX, Hawaii. You can go ahead and complete  
the powering down.

67:26:05 C Roger.

57:28:31 CC Gemini IX, Hawaii. We have 1 minute to LOS.  
Standing by.

57:28:35 P Roger. Thank you very much, Hawaii. See you in  
the morning, I guess.

57:28:38 CC Roger. We'll be looking for you.

# CONFIDENTIAL

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## ROSE KNOT VICTOR

57:55:51 CC Gemini IX, RKV CAP COM.

57:55:53 C RKV, Gemini IX. Go.

57:55:55 CC Roger. We'd like to get this fuel cell purge started and we'd like you to start with Section 2.

57:56:19 CC IX, RKV. We'd like to get an on-board reading of the Hydrogen Peroxide Pressure and Temperature.

57:56:28 C Roger. Stand by.

57:56:35 C Hydrogen Peroxide Pressure is 48; Temperature, 64 degrees.

57:56:42 CC Roger. Copy 48 and 64 degrees.

57:56:54 CC Okay. We'd like to have you turn your Tape Recorder Power circuit breaker to the OPEN position.

57:57:02 C OPEN.

57:57:20 CC And we'd like to get a feel from you, Gemini IX, on that 132 counts of water. Did you drink any of it? Do you have much feel for how much you drank of it?

57:57:31 C Roger. We drank - out of 132, we drank a good 70 of it.

57:57:36 CC Roger. Copy 70.

57:58:01 CC IX, RKV. I'd like to know if that was equal amount between the both of you or - -

57:58:08 C Roger. It's about equal between us.

57:58:10 CC - - Roger. Thank you.

57:58:13 CC Okay. As soon as we get these fuel cells purged and get a Cryo Quantity readout, we'll put you to bed and let you sleep the rest of the night.

CONFIDENTIAL

# CONFIDENTIAL

291

57:58:22 C All right. Sounds good.

57:58:24 C We're still dictating on tape about today's activity and also the Rendezvous.

57:58:28 CC Roger.

58:01:00 CC IX, RKV.

58:01:03 C Go ahead.

58:01:04 CC Okay. We notice you're still on A pump in your primary loop and the control valve temps are coming on down just like you did last night. It might get a bit cold in there in awhile.

58:01:20 P Right. We're going to B now.

58:01:23 CC Roger. We've got you.

58:01:24 P And we're on ECS O<sub>2</sub> at this time.

58:01:29 CC Okay. If you'll switch to FUEL CELL O<sub>2</sub>.

58:01:32 P Go.

58:01:38 P Now we've got the ECS O<sub>2</sub> Heater OFF. Fuel Cell H<sub>2</sub> and O<sub>2</sub> Heaters ON.

58:01:42 CC Roger.

58:01:52 CC Okay, IX. You can move your switch back to the OFF position.

58:01:58 P Roger. It's OFF.

58:01:59 CC Roger. We're all finished with you and you can have a good night's sleep. We'll be watching you here down on the ground.

58:02:06 C That's ...

58:02:18 CC We'll see you back at the ranch, IX. We won't see you again tomorrow.

58:02:23 C Roger.

# CONFIDENTIAL



## CONFIDENTIAL

58:02:26 P Thanks for all the help.

58:02:28 CC Roger. It's been a pleasure.

58:02:31 C How have the seas been down there these times?

58:02:34 CC It's been nice and calm, a nice sunny day.

58:02:40 CC IX, Houston BLACK FLIGHT says they'll see you back at Houston.

58:23:10 P This is the EVA debriefing for this afternoon. We had about four hours for the EVA preparation, of which we took less than three. We thought things went very well during the EVA preparation; of course, as usual we had the snake in the cabin, but we sat here for approximately 45 minutes. We were ready to go except for pilot pressurization, check out emergency ELSS supply, 45 minutes before sunrise and then 25 minutes before sunrise we went ahead and did this. We egressed about 10 minutes before sunrise, got the hatch fully open. The pilot was actually standing in his seat in darkness - still we got no sun coming over the horizon at all.

58:24:10 C This was approximately a GET of 49:16, 49 hours and 16 minutes.

58:24:24 P And the first thing we did - and the first thing I did - I looked around, reached back and saw the EV bar extended on the adapter section. I just reached over and extended the bar on the retro section. I'm sure glad it did because it came in handy later.

58:24:53 C Experienced some difficulty on that.

58:24:54 P The EV camera bracket was very difficult to put in the holder. As a matter of fact, I had to get two hands on it at one time. Very, very difficult in zero g. Then I put on the cutters - I wrapped them around the - the IN hole that was out there. That was again a little more difficult job than predicted, because everything had to be one-handed, and some time - because you have to hold on with the other hand - because if you don't find some way to hold on you are going to drift right out and do a somer-

CONFIDENTIAL

sault right over on top of what you're doing. As a matter of fact, I did it a number of times and I'm pretty sure that that's what broke the D-14 antenna. I actually sat on it - laid on it with my back but - got the cutters out there and got those wrapped around - took the EV Hasselblad and put it in on the chest pack, snapped it on. All this went fairly smoothly, pretty much the way we had planned it. We had the cameras positioned well on top of the - Tom had it - or we got the umbilical out at that time, and Tom, you had some comments on that I guess you might want to read.

- 58:26:09 C Roger. On the umbilical, we had a number of difficulties. Also, when you were standing on the seat, you had some difficulty in maintaining position. I had to help hold your feet down.
- 58:26:27 C When you're working near the Spacecraft, if you did not have something directly to grab, your feet would float up.
- 58:26:41 P Apparent through the whole EVA period was the fact that whenever you float, you float up and if you hold on to something, whether it be the docking bar, handrail, or what it is, you do not have - unless you've got two hands firmly implanted or a foot or a hand or something - you do not have enough strength in your wrist to overcome the inertia of your body floating up. You just can't keep your arms that rigid. And you can't get two hands on it, generally, if it's the same thing like the docking bar or one article because - it's not that you can't reach - close your hands in front of you - but when you're trying to hold on to something, you need to do more than close your hand, you need to grab it and strengthen - or straighten out your wrist. The combination of the ELSS, plus the difficulty in reaching, makes this impossible. I think the main problem starts in the cockpit. The fact that you start floating up all the time. Whenever you're outside, it's always up, you never float down. Even with a slight perturbation you float for a little bit, and then you - you're on your way up again, especially true Tom, on the adapter work. The next thing was that he put the docking mirror, he handed me the docking mirror,

## CONFIDENTIAL

and I put it on the docking bar. Of course, the first thing is to get to the docking bar and I tried to give myself a shove with my feet from the hatch and also hold on to the RCS thrusters. Once you get your hand in an RCS thruster, you can pull yourself forward - it's pretty easy to hit the docking bar but until - until you get yourself alined fairly well with a thruster in a docking bar position, you're just going to float up and force yourself down. I got the mirror on and Tom seemed to like that real well.

- 58:28:39 C Right. The mirror is a wonderful device for keeping track of the person who's outside anytime he's not in your field of view. I could see Gene right when he was going back to the adapter, when he was outside my field of view behind me here - out of the field of view of my window.
- 58:29:00 P And than I - I pushed off, attempting to get in position first to push off from the Spacecraft. I found that holding the umbilical very short, so you could position your feet somewhere on the Spacecraft, and get yourself a fairly good thrust action through the center of gravity. The only problem is your feet do not stay on the Spacecraft - you can't keep them on the Spacecraft. So I pushed off a number of times and a couple of times got out to the full extent of the umbilical and, here again, you can talk about what is the best way to pull in on an umbilical - jerk in or - a slow pull. From my short experience today, I feel that a slow pull is much, much better. But - you can't - even a slow pull is very difficult to direct to the center of gravity. So what happens, even a slow pull will give your body rotation. It's not the rotation that's so bad, but it's the fact you you also pull yourself in towards the Spacecraft, and the chance of your hitting the Spacecraft with your back or your helmet or on the side is very very good. Also, when I pulled in again, I always floated to the top, never to the bottom. Of course, this has something to do, I feel, with the umbilical direction, but I think it had more of a - more to do with the same general tendency that we had here in the Spacecraft to float up. Not truly being zero g. Tom, you watched

CONFIDENTIAL

some of this, didn't you?

- 58:30:32 C Right. Everytime you'd get out there and start to maneuver, you always tended to go straight up - float up.
- 58:30:38 P Again, I think this was not so much because of the manner in which the umbilical was routed, but because of the general tendency to go up. I can't stress too much how difficult it is to hold on to a single bar such as the docking bar and keep your body rigid there partially in the attitude you so desire, because it keeps you - all at once the Spacecraft floats back up under you, and it takes an awful strong wrist if one hand is to hold that - to hold your whole body down and rigid, and two hands to use ELSS, which is in front of you - it's an almost impossible task. I had the Velcro pads on my hands, and I got back to the right-hand side of the Spacecraft. I started to use them and got my left hand in. I started to put my right hand in and I got it in there. But when I pulled my left hand out, I pulled the Velcro pad right off my hand. I didn't clench my fist apparently tight enough to hold the Velcro pad to stay there and I - my hand came right out. But another thing that's very obvious, even with Velcro pads, if you try to walk around the surface of the Spacecraft, it would take a great deal of strength and wrist action to keep your body stiff. I don't think you would be able to develop this type of torque with the Velcro pads, because again your feet will tend to go right on over the top of you because you tend to float up. If you, for instance, got on the starboard side of the Spacecraft and kept your hands in those Velcro pads, you'd probably do a complete somersault and stand on your head and might be laying on your back across the adapter - just because of that tendency again to float up. I guess after that I came back to the hatch. It was fairly easy to work your way up to the hatch, step by step, pulling slowly on the umbilical - just give a slow jerk and then reach out and try to grab another piece of the umbilical and make a sort of vectorial correction to your direction of motion. A very slow pull on a short umbilical and you can - you can tend to control your attitude somewhat better

## CONFIDENTIAL

and, of course, make corrections to your translations. I got back in the hatch and handed Tom the EV camera and he changed the lens and the film pack. I guess, Tom, without difficulty, because you sure handed it back in a hurry.

58:33:09

C

Right. There was no difficulty at all, strapped in here.

58:33:15

P

Then I put it back in and the camera again was very difficult to get back in the slot. But I did get it in and locked. Then I stepped out of the hatch. I had to get the umbilical clear, so I first held on to the short end of the umbilical - maybe about a foot from where it was attached to the hatch - and then attempted to close the hatch that way. It took quite a bit of effort and time to close the hatch because it was very stiff in the semi-open and fully-open modes. It was very loose in the last one - 8-10 inches of travel just before locking. But it took quite a bit of work. I got it partially closed and then, as I had planned earlier, I was going to work my way back to where I could hold on to the handrail on the retro adapter and close the hatch that way. I finally got it fully closed. Tom pulled a little bit from inside and I'm sure at the end much more. We finally got it shoved all the way closed and I was able to sort of control by body movements - one hand being on the hatch, rigid as well as pushing on it, and the other hand being on the arm rail. Then we got the hatch closed, and I began to work my way back to the back of the adapter. While I was still in the retro area, Tom cut off the thrusters and I told him to blow the EVA bars and he did; he said he did, and immediately I knew that we had problems there because I did not see the umbilical guide come around the adapter. So I continued to work my way back there and, had I been able to hold myself rigid enough back there, I would have taken a picture, but the only thing to hold on to was the adapter handrail and that meant holding on out to my left and looking around a fairly jagged, but a very clean, adapter separation plane. So I didn't get a picture. I could see that the foot rail was deployed, the handrail on the far side was deployed - which would be the

CONFIDENTIAL

bottom of the Spacecraft. The handrail and the umbilical guide on my side, or on the top of the Spacecraft, were not deployed and the bathtub was hung up. I worked myself back around to where I could - I was about a third of the way into the adapter - and I just took a slight jolt or tug. I pulled on the handrail, and it broke the bathtub loose. It went sailing back - I gave a fair Delta-P, I guess - and the umbilical guard extended very slowly, as expected. It didn't give me any problems at all. Had I anticipated any when I looked back there, I wouldn't have gone in to do it, but I could see fairly well what the problem was and I knew the handrails extended very slowly. Had it been the foot rail, I would have given it a second thought. But then I threaded the umbilical through the guide - pulled it - and looked over the top of the Spacecraft to see that it was taut. It looked very taut to me and out of the way of all thrusters. However, when I began to put it in the umbilical guard on the handrail, I was about a foot from the mark that we had placed on this umbilical, so I began to wonder. I did work my way back to take another look at it on the adapter, pulled it tight, and it looked good to me, so I worked my way back into the adapter again. Now, here again it's very difficult to do things one-handed because of the strong wrist required. There's always a tendency to float up. If you hold on with one hand, your feet are going to come right on over the top of you. The stirrups are undoubtedly the greatest thing that's happened, but even they, I think, should be configured somewhat, because it's pretty much of a very difficult task to don the AMU or probably any other vehicle in the adapter area.

58:37:25

P

I feel that without stirrups at all, just relying on something like Velcro or to hold one foot under the handrail - or one hand under the foot rail and one foot on top - would have been impossible because in donning the AMU, you have to have both hands free almost all the time. This requires you to be able to stay in the foot rail. It's a little bit different in 1 g. In 1 g you could put your feet in those rails, lean over and down to the fringe where the tether was, make all your tether hookings, tie into the extension without any prob-

## CONFIDENTIAL

lems at all. Here today, every time I would bend down there, I would float out. Then if I stiffened my ankles real tight and bent down there, it was an extremely difficult work load. I got the tether rig tied to my jumper with ease. Started out on a small tether hook, which I could do in 1 g with no problem at all, pressurized. But I had a great deal of difficulty with it today. I tried the large hook. I had a great deal of difficulty with it also, mainly because I needed two hands and I couldn't rely on two hands all the time. I couldn't rely on my feet to keep me in the stirrups and I couldn't rely on two hands to utilize in mating these hooks. I had to use one hand sometime to hold on with and force myself down in the stirrups. I finally got the large tether hook mated and I spent so much time on the other one that I decided that I was good for 125 feet of tether and I'd only go out so far on the first 25 feet. So I was tethered good, anyway, from the umbilical - from myself through the umbilical to the 125 feet. Tom, I think you turned these lights on about this time.

- 58:39:14 C Right.
- 58:39:15 P No, a little bit before that you turned them on because to get at the tether portside I had to take out the pen light.
- 58:39:24 C Right. Did you float out of the stirrups at any time? Did you float out of the stirrups one time or a couple times?
- 58:39:30 P I floated out of the stirrups continually - and that was one of my - that's why it took so much time. I'd say wait until I get in position again because it was a two-footed and a one-handed task to stay in the stirrups. Again it was just a problem of floating up. But again the adapter didn't have anything hanging from it at all, just a pure, clean separation, Tom. Nothing back there at all. It was sharp in placed because I could see that fairly well. Let's see. We went though the checkoff list normally. Oh, the lights. We had the light - as I was facing the AMU - the light on the right worked, the one on the left did not. I had one good pen light so I put it on the left.

CONFIDENTIAL

I figured this would give me ample light, because I need most of the light on the left-hand side anyway to make my connection. We went through the normal donning of the AMU much more slowly - because of holding myself in position and - than we'd otherwise have to do. We can bend over to make and break these connections from the AMU. 1 g pressurized is about 50% easier than 0 g. But I got all the AMU connections loose and fastened to the arm rails, went ahead and got the arm rails down. Here again, retro were pyro-tested within 1 g pressurized; even in the zero g airplane pressurized, it is for some reason easier than this was. This was a very, very tough, two-handed operation. The point being, if I could get two hands on it the way I wanted to, it would be all right, but to get my body up where I could get two hands on it and reach around the bulky ELSS, my feet would come right out of the stirrups. I couldn't keep them in there at all, and this was a problem, Tom. Finally, got them both down. By that time I was probably a little bit bushed, but got them both down and got the bat wings installed. I even put the - the thermal - these little thermal tabs we had on there, and later on I noticed there was only one on there. I noticed also, when we got in with the ELSS, but I definitely did put both of them on there. I guess one had floated away. Maybe I just picked it up again when I leaned over to do something. We went through the procedures of checking out the nitrogen pressure and the oxygen and so forth and I swore here again I have never seen an oxygen valve that was as tight as this.

58:42:32 C I heard - I heard you say that.

58:42:33 P Never at anytime.

58:42:34 C I think actually it was probably frozen.

58:42:36 P I felt for sure that the oxygen valve was frozen. I finally got to it and I finally was able - or I got to it all right - and I had no problem because it was one-handed. I held on with the other hand and had both feet in the stirrups in this case, because I was able to keep them there with my right hand. Opening that thing with the left hand was the



## CONFIDENTIAL

highest - was one of the highest valve forces I've ever felt on an AMU. I got it open, checked the pressures, and the nitrogen pressure looked like it was about 3000 and - I knew it was up there - I couldn't see exactly because of the size of the gage. The nitrogen pressure - or oxygen pressure I could read upwards about 7000. So it looked good to me. We turned on the power switch and I got the light and I turned around and backed in. Now backing in, I must say - and I figured it would be, was an easier job in zero g than it was in 1 g because I was able to - I was much lighter and was able to sort of give myself a little twist and twist myself right around. I came in low and out of the way of the thruster extensions on the AMU and got back in the AMU and sat down. Prior to doing this, the sun was going down while I still had my back to the west. The sun was going down and I was going through - it took me a long time to work on these arms and get the AMU prepared to turn around and doff. The sun was just almost unbearably hot on my back from about the thigh on up to the small of my back. It just felt like I was sitting on a hot stove. I just had to - I - I was fine up until that point on medium flow - I had to go to high flow on the ELSS and I just had to wait there because even my hands, holding on to those handrails, I could feel in my fingertips how hot my hands were. It was just phenomenal - I couldn't believe things would be that hot. I just had to wait until things cooled off. Then about the time the sun went down, my visor started fogging and it started fogging slowly and I continued on, turned around, got in the AMU and then things started fogging up quite a bit. I got the tether positioned - out of the bag - positioned out of the way on the handrail where I wanted it, which looked pretty good, although floating at 0 g there's more umbilical and the tether lines floating around than you'll ever believe. But you could keep track of them and keep them untangled. We then broke the electrical connection that went on the AMU - the AMU electrical connection - and I verified VOX that we had a COM check. Tom, you want to comment on that?

58:45:27

C

The COM check. When Gene would transmit the first

CONFIDENTIAL

part of his word - say the first word, or the first part of his first word would come in very clear, followed by a series of warbles all the rest of the way through. Sometimes it was running like the two words through a series of warbles. In these warbles he was practically unreadable. To me it presented a very marginal case as far as communications. If everything else had gone all right, I would have said GO when the AMU - with this type of communications.

- 58:45:58 P I felt the communications were marginal too. The VOX was much more sensitive than I've ever - ever heard it for some reason. I pushed - I think I solved the problem - I pushed the mike as far away with my lips and tongue as I could get them from my mouth, and that seemed to solve the VOX problem. However, when Tom would talk, he'd be fairly clear but I could tell that I obviously lost, I don't know, at least 10 or 15 to 20 percent of his conversation. There was also a lot of background noise, and I brought up the left-hand rail and I tried to pull the talk mode. I had the same results, so I knew it wasn't just VOX. It was just the general communications. They were acceptable, but not nearly as good as I had hoped they would be or as good as they checked out on the ground. About this time, my visor was really fogging up and I looked at my pressure gage. It was fogging up as a matter of fact, right now it's - I don't know how many hours later - 8 hours later - and there's - it's still solid water.
- 58:47:02 C Nearly 10 hours later. And you still can't read it, can you?
- 58:47:05 P Slowly, cross - slowly - no I can't read it - slowly around the edges, it's good for 30 minutes, but it's just solid with water. That's the way my visor was. It just got - it got just completely fogged up and I could just about see that there was light glowing out there, and that's about it. That's why I tried to use the mirror to see things, and couldn't see through them at all because I couldn't see. I could feel, though, that my right controller - my attitude controller was not. I don't know why because this had happened the last

- 58:50:08 P I actually - when we decided to come out of the adapter and give up on the AMU, I made sure all my connections were undone and I jettisoned the tether to make sure that got out of the way. Came back without much difficulty. I came back, actually, with the sun visor up. I did not have it down - it was daylight - I did not have it down. I worked my way around the adapter over the handrail.
- 58:50:41 C Please keep your feet up.
- 58:50:45 P Well, I could just begin to see now, through around a spot around my nose. The trouble is that spot stayed there - -
- 58:50:51 C That's right, you had a spot around your nose where you could see.
- 58:50:52 P - - Around the center of the plate. The whole side here was fogged up and the whole side over here was fogged up. And I came around on the handrails and worked my way into the seat area and stood there for awhile because, admittedly, I was probably pretty tired by this time, and wanted to see what that visor would do. I put my sun visor down at this time because there didn't seem to be much appreciable change in the visor. It was daylight, so I thought it advisable to go ahead and put it down. I waited there for awhile and it slowly started to clear, but it would have been an hour in the sun before the water cleared out of it and, as I say, even here my pressure gage is still - still full of water. I couldn't read my pressure gage out there, even when I could see through my visor. We covered the EV camera and I handed the Hasselblad to Tom. I stayed out there for awhile and contemplated whether we should wait for darkness for S-1 or not. We decided we'd go ahead and try to get in. We gathered up the umbilical and worked my way in.
- 58:52:07 C The Egress Maneuver proved every bit as difficult as what we anticipated, with respect to complexity of gear to be handled. We'd gone through it many times so we were prepared for it, but it was still

## CONFIDENTIAL

a long tedious process. The hatch was also hard to open to the extent of the ... egress. Also hard to close for the first part of the stroke.

58:52:31

P

I think the hatch made it difficult for me to egress because I'd get personally in and then I'd try to pull the hatch and it was extremely stiff. When it was open 20 or 30 degrees - extremely stiff, and I had to get partially out to bring it in, and then try to go through my egress again and this was difficult. I knew I wasn't all the way down in with my knees when I leaned back, but we had the hatch coming, so I just pushed down with all I had from my arms and, believe it or not, Tom was able to - the last - 6 or 8 or 10 inches in fast travel was very easy. Tom was able to get a good inertia on it and we locked it the first time. The trouble is - one thing I was trying to get clear from the hatch area, Tom, was the oxygen lines and my tiedown cord, and there was a line from the umbilical guard that was floating around, and I didn't want to get anything caught in the hatch seal. There were a number of things that were floating out in that area. I think just - I know there's many more things I'm going to remember - but some things that are probably worth mentioning. I feel that all our egress work in the zero-g airplane is well and good, but it ought to be done after we're good and tired. The umbilical: I've got a note here on umbilical or egress, and I don't remember exactly what it was but it will come back to me I'm sure. The body inertia out there, again is a big thing; that - your tendency to float up - tendency not to be able to stabilize yourself with one hand by holding on to anything. Unless you've got extremely strong wrists, I think this is almost impossible for the average person to do and the ELSS prevents you from holding on to the same point or the same bar with both hands. If you can't get close enough to it, such as the docking bar, which is away behind the nose, or there's some obvious reason that you can't get close enough to hold on to anything unless it's right in front of the ELSS - you have to reach for a little bit. I think the S-1, after my experience with working - standing - in the cockpit

CONFIDENTIAL

and working in the cockpit - it's well and easy to say just go ahead and lean on the hatch or lean on the adapter and take a picture. If you just even stand in the hatch or the hatch area or the seat, Command Pilot Tom had to either hold my feet down or had to lock them under something. You're always floating in one direction or another, and to take S-1 pictures for 30-second exposure. times I feel would have been impossible, and I don't feel we lost a thing. I hope possibly we gained something by taking the pictures from inside the Spacecraft.

- 58:55:23 C Also, every slight motion he made, even standing up, would fire the thrusters. We were in Plat mode. One example, when you went to the adapter and I turned off the control power for approximately 30 seconds, at the end of this time we were yawed over 100 degrees and pitched down 30 degrees - -
- 58:55:50 P I couldn't tell - I was so busy wrapped up in everything else - -
- 58:55:52 C - - Just for the torques you generated. I think that for the rest of the Gemini program, the ideal way is the way we did it. Use the Plat mode and Automatic Rate Stabilize Reference mode, because when Gene was working in the adapter, tugging on those arms, the Plat mode was firing continuously back there. The disturbing torques displaced on the Spacecraft were very difficult to overcome in Pulse mode. It would take a Direct mode in RATE COMMAND.
- 58:56:22 P I feel that procedures in our planning were well thought out. I think they would have sufficed, but there were a number of unknown terms of operating back in the adapter section. Our experience thus far in EVA is to just let us work out in front of the Spacecraft a little bit - a little umbilical work but - we just - we just - never have done - never have done any long-term tasks such as working in the adapter. And you've got to fix yourself, fix your position back there or it's just such a workload - and such a task that it's almost unbelievable. I don't feel all was lost; as a matter of fact, I feel a great deal was

## CONFIDENTIAL

gained. I feel that I was able to accomplish a great deal of work back there and look situations over and see what was happening, such as getting rid of the bathtub and what-have-you and, as I say, I think our procedures would have accomplished what we set out to do, but we obviously overlooked a number of very small things, one of which is the restriction that ELSS does give you when you want to reach out in front of you and you have to have two hands. I also - I will say that I don't feel that a large hook for anything is adequate. I think we ought to build one larger and make things easy - and not make things adequate for EVA any - more, but make them easy for EVA, which means going to the extreme of our logical thinking for normal 1 g flying. I know this is true, now. Okay, Tom, you might mention something about opening the left hatch with all the stuff you have in your - -

58:58:02

C

Right. With all the gear I had in my footwell, umbilical bag, which was later out, the S-10, and the other gear that I had stowed in the footwell, I think it would have been nearly an impossible task for me to open the hatch and do the egress after that. I could have opened the hatch, but I think there was a very low probability that I ever would have been able to get my hatch closed. So I - opening the Command Pilot's hatch during the Gemini program, I think is a last ditch resort and should be considered very carefully before it is ever attempted.

58:58:47

P

- - It is difficult for me to say whether we - how the water in the ELSS went - it did get hot toward the end - a little warm. I don't necessarily attribute it to ELSS, I attribute it to the - maybe to my workload, but I think it performed very well. I was doing fine on medium flow until I got that sun on my back and that was just - that was just unbelievably hot. Maybe I was in the focal point of the gold curtain back there; I don't know, but most of the heat was focused on my back and the back of my legs, not on the front, and it was unbearably hot. High flow didn't put a dent in it, and I think this is what started everything to fog up. The best way

CONFIDENTIAL

obviously to do it is out-of-plane so you don't have that sun on your back, but then I'm sure there are going to be some stationkeeping problems with other vehicles, at which time I know we'll have a lot to elaborate on later, probably. But I don't know. If we ever work in the adapter again, we're certainly going to have to consider that sun going down.

58:59:51 C Right.

58:59:56 P I failed to mention that during egress we did lose one roll of film. We don't know which one it was - exposed - unexposed - but we did lose one.

66:38:48 CC Gemini IX, Carnarvon CAP COM.

66:39:04 CC Gemini IX, Carnarvon CAP COM.

66:39:09 C This is Gemini IX. How do you read me?

66:39:14 CC Gemini IX, Carnarvon CAP COM. We're standing by for your fuel cell purge.

66:39:29 C Hello, Carnarvon. Gemini IX.

66:39:31 CC Gemini IX, Carnarvon. We're standing by for your fuel cell purge.

66:39:46 C Hello, Carnarvon. Gemini IX.

66:39:49 CC Gemini IX, Carnarvon CAP COM.

66:39:53 C Roger, Carnarvon. Gemini IX. How do you read?

66:39:57 CC Loud and clear. How me?

66:39:59 C Roger. We'll get your purge in just a minute.

66:40:01 CC Roger.

66:42:51 CC Gemini IX, Carnarvon.

66:42:54 C Go ahead, Carnarvon.

66:42:55 CC Could you give me an on-board readout of your H<sub>2</sub>O<sub>2</sub> pressure?

## CONFIDENTIAL

66:43:00 P Roger. It's about full-scale here, 500.

66:43:07 CC Roger. Copy.

66:43:08 P It's 60 degrees.

66:43:53 CC Gemini IX, Carnarvon CAP COM.

66:43:55 C Go ahead, Carnarvon.

66:43:56 CC Okay. When you complete your fuel purge, will you begin to power-up an Alinement Check List?

66:44:02 C Roger.

66:44:07 CC Okay, Gemini IX. Carnarvon here.

66:44:10 CC Will you stand by to copy a Flight Plan update?

66:44:13 C Roger.

66:44:34 C Go ahead with your update, Carnarvon.

66:44:35 CC Roger. Item 1 is a node: Time, 68:47:45; Remarks, Rev 43, 130 degrees west; right ascension, 18 hours 44 minutes. Second item, final Canary Islands: Time, 67:37:40; Remarks, crew status report; then begin stowing equipment.

66:45:39 CC Gemini IX, Carnarvon CAP COM.

66:45:42 P Go ahead, Carnarvon. Fuel cell purge is complete. Those the only two items?

66:45:46 CC Roger. Will you put your Cryo Quantity Read switch to ECS O<sub>2</sub>?

66:45:54 P Roger. ECS O<sub>2</sub>.

66:46:04 P Okay. FUEL CELL O<sub>2</sub>.

66:46:16 CC Gemini IX, Carnarvon. Will you switch to FUEL CELL O<sub>2</sub>?

66:46:21 P FUEL CELL O<sub>2</sub>.

CONFIDENTIAL



# CONFIDENTIAL

309

66:46:28 CC FUEL CELL H<sub>2</sub>.

66:46:32 P H<sub>2</sub>.

66:46:33 CC Roger.

67:25:13 CC Gemini IX, this is Houston.

67:25:15 C Good morning, Houston. Gemini IX.

67:25:19 CC Roger. How's everything going up there?

67:25:22 C Roger. Pretty good. We've got the Platform Alined 0, 0, 0 degrees, and computer should go in on a different update mode. Our stowage is pretty well squared away.

67:25:34 CC Okay. We have a message for you on the computer problem that we had the other day. You'll have to START COMP. When you get to switching into REENTRY, the computer running light comes on. An alternate procedure is to switch out of REENTRY to a spare position, which is one detent clockwise of REENTRY, and then switch back to REENTRY 1 second prior to retrofire.

67:26:13 C Okay. We've just gone to REENTRY on the computer and the light does not come on.

67:26:17 CC Okay. Good.

67:26:35 CC Gemini IX, Houston.

67:26:37 C Go, Houston.

67:26:38 CC Roger. I've got some ball scores here if you're interested.

67:26:42 C Okay. Let's here them, Buzz.

67:26:44 CC Roger. Which ones are you interested in? I've got the whole "smear" here.

67:26:47 C Let's try the Astros and the Cubs.

67:26:53 CC Okay. Pittsburgh 10, the Astros 5.

# CONFIDENTIAL

## CONFIDENTIAL

67:27:01 C You struck out. Try again.

67:27:05 CC Well, if I can read this message, it looks like the Reds 5 - the Reds 8 and the Cubs 3.

67:27:12 C Yes, you ought to go back to sweeping the streets; you struck out again.

67:27:16 CC Doesn't sound very good, right? Okay. We had a tornado in Enid, Oklahoma. How's that one?

67:27:24 C In Enid?

67:27:25 CC Yes.

67:27:27 C How's the weather in Houston?

67:27:30 CC Looked pretty good when I came in.

67:27:33 C Pretty dark out, right?

67:27:39 CC Can you see anything of a tropical storm about, oh, a little bit behind you right now. There is supposed to be a storm building south of Cuba called - it'll be called Alma, if it reaches that strength.

57:27:56 C We're in darkness right now, Buzz. Can you give us a latitude and longitude on it?

67:28:21 CC How about 85 degrees west and about 18 degrees north?

67:28:27 C 85 and 18. Okay.

67:28:22 P Looks like we pass just about over it next time around.

67:28:36 CC On the Cubs, Gene - had a double header. The first one was Reds 8, and the Cubs 3, and the second one, Cubs won 9 - 5.

67:28:46 P Yippee!

67:28:54 P Out of two teams, I haven't gotten many wins this week.

CONFIDENTIAL

# CONFIDENTIAL

311

67:29:22 CC Say again?

67:29:27 P I said out of two teams, I don't have many wins this week.

67:29:54 P Is poor Ed going out pulling his hair out after yesterday?

67:30:03 CC Gemini IX, Houston. I didn't read your last transmission. Could you give us a Propellant Quantity, please?

67:30:09 C Roger. We're reading zero on the gage, but we still haven't had a drop on our fuel regulated pressure, so we're not on the Volkswagen tank yet.

67:30:20 CC Okay. I understand. What's that pressure showing now?

67:30:24 C Say again?

67:30:25 CC What is the pressure showing now?

67:30:27 C Roger. 305.

67:30:29 CC Good enough. Ready to get a vector to go get the ATDA?

67:30:36 C Say again. We've got a little bit of fuel left; we might try to work in a fourth one.

67:30:44 CC Might as well.

67:30:57 C We had good solid lock on the radar yesterday. 170 miles on it.

67:31:03 CC Yes. That was real good.

67:31:14 CC Gemini IX, Houston.

67:31:16 C Go ahead.

67:31:18 CC What sort of reading are you getting now on your Cabin Pressure?

67:31:22 C Roger. We're about 4.8.

# CONFIDENTIAL

## CONFIDENTIAL

67:31:24 CC Roger. That's quite close to what we've got here.

67:31:28 C It has been holding about 4.9 to 4.8 all night long.

67:31:31 CC Okay. Very good.

67:32:00 CC Gemini IX, Houston.

67:32:02 P Go ahead, Houston.

67:32:03 CC Roger, Gene. Chris is wondering when he ought to get the cigars out to light up, once you hit the water.

67:32:12 P When he sees our smiling face on the carrier, and I'll buy.

67:32:16 CC You'll buy, is that right?

67:32:27 C Tell Chris that I might even break training after splashdown and smoke one, too.

67:32:36 CC I'm not sure I read that right.

67:32:39 C You did.

67:32:41 CC Okay. We'll be seeing you, oh, perhaps later on this afternoon.

67:32:45 P Roger.

67:33:41 CC Gemini IX, Houston.

67:33:43 C Go ahead, Houston. With you.

67:33:45 CC Roger. I'd like to remind you of a crew status report over Canaries and put the temperature probes in at, oh, about 1 minute. We've got 1 minute to LOS.

67:33:56 C Roger.

CONFIDENTIAL

# CONFIDENTIAL

313

## CANARY ISLANDS

67:38:11 CC Gemini IX, Canary CAP COM. We have a valid oral temp. We're standing by for your third water report.

67:38:19 C Roger. The water gun now reads 2925 and both crew members have had two meals since yesterday evening.

67:38:33 C It looks like it's nice and sunny out in the Canaries today.

67:38:36 CC Yes. It's a lovely day outside here.

67:38:39 C I'm going to snap a couple of pictures.

67:39:19 CC Gemini IX, Canaries. Could you give us a sleep report also?

67:39:23 C Roger. Pilot had 5 hours sleep, Command Pilot had 6 hours.

67:39:31 CC Roger. Copy.

67:39:37 CC You're looking real good on the ground here, Gemini IX. We'll be standing by.

67:39:41 C Roger. We're powered up to Platform . . . We're going to take some pictures on this pass and then finish the stowage.

67:39:46 CC Okay. Very good.

67:40:23 P Canaries, IX. Which island is the tracking site on?

67:40:28 CC It's on the Grand Canary Island.

67:40:31 P Is that the big one in the middle?

67:40:33 CC Right, that's the big one. Way down at the south end.

67:40:39 P Got any trees down there?

67:40:43 CC Just a few right on the end.

# CONFIDENTIAL

## CONFIDENTIAL

## KANO

68:13:34 CC Gemini IX, Carnarvon.  
68:13:42 P Go ahead, Carnarvon.  
68:13:43 CC Roger. We don't have anything for you. If you need anything, give us a call.  
68:13:48 P Will do. Thank you, Bill.

## GUAYMAS

68:55:16 CC Gemini IX, Houston.  
68:55:20 C Houston, Gemini IX.  
68:55:22 CC Good morning, Tom. We're standing by.  
68:55:24 C Roger. In our Pre-Retro Check during stowage, as I was checking through the cockpit, I knocked off one of the Electronic Timer circuit breakers for about 1 second and got it back on. Checked; all the clocks run the same as the electric clock does.  
68:55:46 CC Okay. We're not reading you too well. Wait till we get a little more elevation here.  
68:55:48 C Okay.

## TEXAS

68:56:28 CC IX, Houston. You say you find your Electronic Timer circuit breaker knocked off for a little bit and it's reset.  
68:56:35 C Roger. I caught it when I knocked it off and got it right back on. Probably a second or so off. We'll have to recheck all the clocks for sync.  
68:56:45 CC We'll have to update that thing anyway.

CONFIDENTIAL

# CONFIDENTIAL

315

68:56:47 C Yes. Okay.

69:03:33 C Houston, Gemini IX.

69:03:36 CC Go ahead, IX.

69:03:37 C Roger. We should be approaching that tropical storm about now. We'll pitch down and see if we can take a look at it.

69:03:42 CC Okay. That's the one in your landing area.

69:03:49 C That's just about in the landing area. Right?

69:04:01 CC Roger. We have you approaching 250 on your VW tank. When you get to that value you might arm it.

69:04:10 C Roger.

69:07:13 C Houston, Gemini IX. We're arming the Volkswagen tank at this time.

69:07:17 CC Okay, Tom.

69:07:24 C And it works good.

69:07:27 CC Yes, we have it. Pressure coming up.

69:08:53 CC Houston is about 1 minute from LOS at Bermuda.

69:08:57 C Roger.

## CANARY ISLANDS

69:15:34 CC Gemini IX, Canary CAP COM. You're looking good on the ground. We're standing by.

69:15:38 C Roger. Canary. We're just taking a few pictures here.

69:15:42 CC Roger.

## KANO

69:24:09 CC Gemini IX. Houston standing by.

# CONFIDENTIAL

## CONFIDENTIAL

69:24:13 C Roger, Houston. Loud and clear.

69:24:15 CC You're the same.

69:24:17 C Houston, Gemini IX. Would you relay the word to Captain Hartley to have the big ship right on the landing point?

69:24:24 CC You bet we will!

69:24:25 C Okay.

69:24:27 CC Tom, your IVI versus bank angle chart is satisfactory for this orbit.

69:24:36 C Roger.

69:28:35 CC Gemini IX, Houston approaching LOS.

## CARNARVON

69:48:51 CC Gemini IX, Carnarvon

69:48:52 C Go ahead, Carnarvon

69:48:53 CC I've got some reentry information for you when you're ready to copy.

69:48:57 C Roger. You're coming in very weak. Go ahead.

69:49:00 CC I say we have some reentry information for you when you're ready to copy.

69:49:04 C Ready to copy.

69:49:07 CC Okay. This is the 46-1: your nominal IVI's are aft 298 and down 112; bank angle additional deflection at 0 is 189; 55 is plus 45, and 90 is 75; pitch gimbal at 400K 90. You won't have a lighted horizon at Retro, but you will at 400K. Begin blackout at 22 plus 08; end blackout at 20 plus 75; RET of drogue, 28 plus 47; RET main, 30 plus 21. Use your back-up curves for bank angle 146 degrees.

69:50:33 P Carnarvon. 46-1: understand IVI's are 298 and

CONFIDENTIAL



# CONFIDENTIAL

317

112: downrange needle deflection zero degrees is plus 189; the 55 degrees is 45; 90 degrees is 75.

69:50:53 CC That's minus 75.

69:50:54 P Minus 75. Roger. And pitch gimbal is 400K, 90 degrees.

69:50:59 CC Roger.

69:51:03 P ... that was blackout at 22 plus 08; end blackout at 27 plus 05; and drogue at 28:47; main at 30 plus 21.

69:51:19 CC That's affirm.

69:51:25 CC I've got some weather here for you.

69:51:28 C Okay. Go ahead.

69:51:31 CC Okay. The clouds are 2,000 scattered visibility at 8 miles, your winds are 120 at 12, the waves are 2 to 3 feet, your altimeter setting is 30.12, and the aircraft in the area are Air-Boss 1 and Air-Boss 2.

69:51:58 C Roger. Got the weather. Altimeter is 30.12; Air-Boss 1; Air-Boss 2 update.

69:52:03 CC That's affirm.

69:52:10 P ...

69:52:12 CC Roger.

69:52:15 CC Have you checked the main batteries yet?

69:52:19 P About an hour ago. I'll give them another check.

69:52:22 CC Okay. I'd like to get the voltages from you.

69:52:25 P You want the reading?

69:52:26 CC That's affirm.

69:52:33 P Number 1 at 22.2.

69:52:37 CC Roger.

# CONFIDENTIAL

## CONFIDENTIAL

69:52:46 CC Roger.  
69:52:50 P Number 3 is 21.8.  
69:52:52 CC Roger.  
69:52:59 P 4 is 23.  
69:53:01 CC Roger. Got them all.  
69:55:23 C Carnarvon, Gemini IX.  
69:55:26 CC Go ahead, IX.  
69:55:28 C What's the position Bill had on GET?  
69:55:31 CC Roger. I'll give you a Mark at 69:56:00, in about 30 seconds.  
69:55:57 CC Stand by. 3, 2, 1,  
69:56:00 CC MARK.  
69:56:01 CC 56 minutes.  
69:56:03 C Okay.  
69:56:24 C Give me a Mark at 56 minutes.  
69:56:28 CC 3, 2, 1,  
69:56:30 CC MARK.  
69:56:33 C ...  
69:56:43 CC We're 40 seconds LOS, Gemini IX.  
69:56:48 C Roger.

## GUAYMAS

70:27:35 CC Gemini IX, Houston.  
70:27:38 C Go ahead, Houston. Gemini IX.

CONFIDENTIAL

# CONFIDENTIAL

319

70:27:40 CC Okay. We've got your Retro pad when you are ready to copy.

70:27:50 P Stand by one.

70:27:52 C This is Gemini IX. I'll go ahead and arm the RCS rings at this time.

70:28:01 C Go ahead. I'll do the bookkeeping.

70:28:08 CC Have you armed it yet, Tom?

70:28:10 C Not yet, Neil.

70:28:11 CC Okay. Hold off till we get over - a couple minutes here - till we get to Texas and will have T/M.

70:28:17 C Give me a mark when you want me to.

70:28:19 CC Okay.

70:28:23 C Go ahead with the pad, Neil.

70:28:25 CC Okay. This is 46-1: GET RC, 71:46:44; 400K, 19 plus 52; RET RB, 25 plus 42; bank left 50, bank right 50. I think you got the rest of the stuff on that page.

70:28:47 C Yes, I've got it.

70:28:57 P Okay. 46-1: GET RC is 71:46:44; 400K, 19 plus left bank at 25 plus 42; left bank 50, right bank 50.

70:29:10 CC Right, and I have your MDIU stuff when you're ready to copy.

70:29:14 C Go ahead.

70:29:16 CC Okay. Address 03, 64006; Address 04, 34775; Address 65, 01881; Address 66, 34487; Address 07, 65556; Address 08, 40832; Address 09, 15295; Address 10, 07771; Address 11, 28500. Go ahead.

70:30:08 P Roger. 03, 64006; 04 is 34775; 65 is 01881; 66 is 34487; 07 is 65556; 08 is 40832; 09 is 15295; 10 is 07771; 11, 28500.

# CONFIDENTIAL

## CONFIDENTIAL

70:30:38 CC That's correct.

70:30:42 C Do we have a loaded computer at this time?

70:30:51 CC Negative. Your computer is not loaded yet.

70:30:53 C Okay.

70:30:55 CC Okay. That bank right was 60 degrees; bank left 50; bank right 60.

70:31:01 C Bank right 60.

70:31:06 CC Okay. We're ready to transmit the load now.

70:31:09 CC You all set?

70:31:10 C We're all set.

70:31:14 CC Okay. Transmitting now.

70:31:40 CC Did you get a light on that, Gene?

70:31:43 P This time I received it.

70:31:46 CC Okay. We're ready at Arm RCS when you're ready.

70:31:52 C Roger. Arm your RCS now.

70:31:59 CC And we're ready for you to turn the batteries on.

70:32:04 C ...

70:32:07 C Okay. The ... should read 2500, ... 2450.

70:32:16 CC Roger. We agree with that.

70:32:18 P These batteries are ON. We have a light.

70:32:25 CC Okay. And we would like to have you check your peroxide temperature and pressure, please.

70:32:34 P Okay. Peroxide pressure seems to have dropped to 500 psi, and temperature is about 65.

70:32:39 CC Roger. We copy. Would you put your Antenna Selector to REENTRY, please?

CONFIDENTIAL

# CONFIDENTIAL

321

70:32:44 P Antenna, REENTRY.

70:32:46 CC Okay.

70:32:57 CC Okay. Your load looks good, based on the computer readout on the ground.

70:33:02 P Roger. Same thing here.

70:33:11 P Is our  $T_R$  minus 256 out?

70:33:14 CC Say again.

70:34:42 CC Okay, IX. We're ready to transmit  $T_R$ .

70:34:46 C Okay. We're ready for it. Standing by. Okay.

70:34:55 CC It's okay on the ground.

70:34:57 C Okay. They all check out good.

70:34:59 CC Good.

70:35:07 C Okay, Houston. Gemini IX. Both RCS rings A and B check out good. All control modes.

70:35:15 CC Roger, Tom.

70:36:23 C Houston, Gemini IX. Our Pre-Retro Check List is complete at this time. Take a break at this time.

70:36:31 CC Roger.

70:36:37 C ... Captain Hartley guarantees big boat is on the spot?

70:36:43 CC We couldn't copy that, Tom.

70:36:46 C Roger. Does Captain Hartley guarantee that the big boat's going to be on the spot?

70:36:52 CC I think that you'll know where you're landing better than they know where they are.

70:36:57 C Roger.

70:36:59 CC Be careful.

# CONFIDENTIAL

## CONFIDENTIAL

70:37:23 C Houston, Gemini IX. Do you want me to leave the main power up or . . . most of the time?

70:37:32 CC Yes. Let's leave them up for the rest of the time.

70:37:37 C Okay.

## ANTIGUA

70:39:51 CC Gemini IX, Houston. You want to give us a status report on your reentry stowage and Pre-Retro Check List?

70:39:58 C Roger. We have completed all the reentry stowage and we have completed all the Pre-Retro Check List. Standing by now for Tr minus 256.

70:40:08 CC Roger.

## BERMUDA

70:41:50 C Houston, Gemini IX.

70:41:52 CC Go ahead.

70:41:53 C Request GET time hack please, now.

70:41:59 CC Okay. The GET time hack is - let's see - 70:42:10 on my Mark.

70:42:11 CC MARK. 70:42:10.

70:42:13 C Right on. Thank you.

70:43:59 C Houston, Gemini IX.

70:44:01 CC Go ahead.

70:44:03 C Roger. You might have ECON check our water quantity pressure ... We can't get a full charge to the gun any more.

70:44:12 CC Roger. We understand that you can't get a full

CONFIDENTIAL

# CONFIDENTIAL

323

charge to the gun. We're about to get to LOS.  
We'll probably talk to you at Canary.

70:44:20 C Roger.

## CANARY ISLANDS

70:49:49 CC Gemini IX, Canary CAP COM. We have you GO on the ground and we're standing by.

70:49:55 P Thank you, Canary.

70:49:57 C We Alined the Platform at this time. Heading straight to the water and everything is smooth.

70:50:02 CC Very good.

## HOUSTON

70:56:56 CC Gemini IX, Houston standing by.

70:56:59 C Roger, Houston.

## TANANARIVE

71:09:28 CC Gemini IX, Houston standing by.

71:09:31 C Roger, Houston. We're still Alining the Platform and taking it easy.

71:09:37 CC Roger.

71:16:35 CC Gemini IX, Houston. Approaching LOS, Tananarive.

71:16:51 P He has LOS.

71:21:02 C We are at  $T_R$  minus 256 now.

71:21:03 P No COMP Light. Is that right?

71:21:05 C Yes.

# CONFIDENTIAL

## CONFIDENTIAL

71:21:08 C ... 256. Got all the primary circuit breakers checked, by the way?

71:21:32 P Okay. I am going to the Recharger switch right now. It's OPEN.

71:21:40 C OPEN.

71:22:02 P T<sub>R</sub> minus 256 Second Check List. I'll just read this out to you, Tom. Okay?

71:22:05 C Sounds good.

71:22:13 P Got a crazy sky out there. Look at that!

71:22:24 C Looks like we're going to see it like that for a while.

71:22:26 P Yes.

71:22:37 C Boy, that's beautiful!

71:22:58 P Oh, that looks like something out of a Biblical story; a couple of stars shining, an orange and a blue sky.

71:23:04 C Holding steady.

71:23:07 P A ragged horizon.

## CARNARVON

71:24:00 CC Gemini IX, Carnarvon.

71:24:03 P Go ahead, Carnarvon. Gemini IX.

71:24:06 CC Roger. We would like to give you a time hack to be set up 20 minutes in your event timer.

71:24:11 P Roger. We're currently set up but we'd like a

CONFIDENTIAL



# CONFIDENTIAL

325

time hack to check it.

71:24:16 CC Roger. I'll give you a hack at 22 minutes.

71:24:20 P Roger.

71:24:39 P How close are we, Tom?

71:24:41 CC 5 seconds, 4, 3, 2, 1,

71:24:45 CC MARK.

71:24:50 P Roger. We're right on the event timer and also on the computer. We're counting down real well.

71:24:56 CC Okay.

71:24:59 P Computer is in REENTRY at this time.

71:25:01 CC Roger.

71:25:06 CC We don't have anything else for you. We'll be standing by. Have a good trip home!

71:25:10 P Okay. Thanks a lot for the help, Bill.

71:25:12 CC Roger.

71:25:13 C We'll see you back in Houston.

71:25:43 C Okay. We'll get these other punches right on the 1 minute.

71:25:49 P Okay.

71:25:50 C Everything's running fine. Everything's 1 minute down and 1 minute up.

71:26:11 P Okay. I've got the 256-Second Check List completed down at the bottom, and my part at the top, with the exception of where I am right now. I'll read right through.

71:26:17 C Okay.

71:26:19 P And - you will be ...

# CONFIDENTIAL

## CONFIDENTIAL

71:26:43 C Have you got your D-Ring ON?

71:26:46 P No. It's jammed.

71:26:51 C Are you having any luck?

71:26:53 P Well, I just pulled the pin out about a quarter of an inch so I can get it out, because it's so hard to get out.

71:27:05 C Think I'll do the same thing after Retrofire.

71:27:19 C After you get your camera on the floor, then pull your D-Ring out.

71:27:24 P Yes.

71:27:26 C All we need is one of them.

71:27:28 P Okay.

71:27:54 C It's bank left 60, bank right 60.

71:27:56 P Yes.

71:28:57 C Nights are a little long since the star is leaving.

71:29:22 C Yes. The old bear has performed real good for us, Gene.

71:29:29 C Yes.

71:29:32 P That's our reentry and float.

71:30:46 C The float is about impossible to get out, isn't it?

71:30:48 P Yes. Mine was real tough, even on the pad. Down there Jim had to get there with both hands and tie mine on.

71:31:09 C Yes. I've got mine out about half way.

71:31:11 P Okay.

71:31:25 C ...

71:31:44 CC Carnarvon has 1 minute to LOS.

CONFIDENTIAL

# CONFIDENTIAL

327

71:31:46 P Roger. Carnarvon.

71:32:50 C There's our friend Gomeisa, way up there.

71:33:51 P Looks like the Platform is pretty well Alined. Okay. We're about 10 minutes.

71:35:00 P Are you happy with the Alinement?

71:35:03 C We'll stay at this rate if you want us to. We'll stretch it as far as what's coming down now.

71:35:07 P Okay.

71:35:37 P No, we're not. We're about 10 minutes right now.

71:35:44 C Tr minus 256 Check List.

71:35:54 C Hello ...

71:35:55 P Hello, Carrier! Can you hear us now?

71:36:00 CC Roger. This is reentry of Gemini IX. You are at 10 minutes, 40 seconds to splash down. Your Retro-fire, 71:06:45.

71:36:16 P Okay. 04:16. I'll read these off to you, Tom.

71:36:31 C Those fuel cells are still holding good.

71:36:33 P Yes, of course. Indicate battery currents as well as fuel cell currents conflict as far as main current. That's why they are a little unbalanced, but they are looking real well.

71:36:43 P Okay. - on Reentry ON, ON, ON.

71:37:49 P Here she goes.

71:37:53 P Count down at about almost 9 minutes.

71:38:12 P Okay. Faceplates are down.

71:39:10 C See the stars out there - look, there's our friend Gomeisa for you!

71:39:17 P Okay.

# CONFIDENTIAL

## CONFIDENTIAL

71:39:22 P Faceplate is closed and locked.

71:40:15 P Okay. Event timer is in sync. Computer's REENTRY. Squib batteries are ON. Main Batteries are all ON. Prop gages are indicating RCS A. Record switch is CONTINUOUS. Cryogenic is OFF.

71:40:31 P Calibration circuit breaker is coming OFF.

71:40:54 P Are the circuit breakers all verified up here, Tom?

71:40:58 C Yes.

71:40:59 P Bang, bang, bang, bang, bang, bang. They're all ON.

71:41:30 C They are all ON?

71:41:38 P Okay. It's about five minutes.

71:42:25 P 4:25. We ought to get these things lit up here in a minute. There it is, 4:16. Okay, Tom, Attitude Control, PULSE.

71:42:31 C Yes.

71:42:33 P Platform, ORB RATE.

71:42:35 C What?

71:42:37 P What?

71:42:41 P FDR, FLAT; FDM, RATE.

71:42:44 P FDI Scale Range, HIGH.

71:42:46 C Yes.

71:42:47 P Attitude Control, RATE COMMAND.

71:42:49 P Verify three Rate Gyros at PRIMARY. OAMS Attitude Control circuit breaker, OFF.

71:42:56 P OAMS Prop Motor valves, OFF.

71:42:57 C I'm in ORB RATE.

CONFIDENTIAL

# CONFIDENTIAL

329

71:42:59 P Okay. Your're in ORB RATE.

71:43:05 P Okay. You want them to go to RCS.

71:43:12 P RCS, ACME.

71:43:16 P Got Control?

71:43:17 C Sure do.

71:43:18 P Okay. OAMS Circuit Control Motor valve coming OFF.

71:43:23 P Okay. OAMS Prop Motor valve is coming OFF.

71:43:27 P Okay. You want to go to RATE COMMAND.

71:43:37 P Control Spacecraft to Retro-Attitude; and Retro-Power, ARM.

71:43:44 C Control Mode.

71:43:47 P And we've got it all timed and the 256 Check List is complete. I've got the rest over here.

71:43:51 P You've got your Retro-Power, ON. And you've got RCS and you want to go to RATE COMMAND and we'll be all set.

71:44:07 P Okay. We're waiting for - -

## CANTON

71:44:08 CC Gemini IX, Houston. Standing by.

71:44:13 C Roger. Houston. We're - time is 2:30.

71:44:17 CC We're not reading you very well yet.

71:44:19 P Roger. The  $T_R$  minus 256 Check List is complete.

71:44:23 CC Roger. Understand.

71:44:32 C That's good to know.

71:44:33 P Coming up about 2 minutes, Tom.

# CONFIDENTIAL

## CONFIDENTIAL

71:44:35 P You're in Retro-Attitude and next thing you've got to do is go to RATE COMMAND.

71:44:43 P ...

71:44:44 C Yes ...

71:44:47 P Okay. RATE COMMAND.

71:44:50 C Wow! Something - -

71:44:53 P Yes.

71:44:56 P Boy! I can see everything firing out there!

71:45:00 C Tell me when it's full up.

71:45:02 P Full up.

71:45:06 C Boy! Am I scared!

71:45:10 P Okay. You've got about 1 minute coming up, Tom. At one minute we'll push these.

71:45:25 P We're all set up over here to get rid of these things, aren't we?

71:45:29 C We're on and it's full.

71:45:31 P Okay.

71:45:36 C Circuit breakers are coming - -

71:45:40 P Coming up on 1 minute to Retrofire.

71:45:42 C Roger.

71:45:43 CC 60 seconds.

71:45:44 P Is that it?

71:45:45 CC MARK.

71:45:46 P Ready?

71:45:47 CC 1 minute.

CONFIDENTIAL

71:45:48 P There's OAMS; there's Electric; and here goes Adapter. Wow! That went all right.

71:45:56 C SEP OAMS, SEP ELECTRIC, SEP ADAPTER.

71:46:01 C Okay.

71:46:03 P T<sub>R</sub> minus 30. We want Retro Rocket Squibs, ARM.

71:46:08 C Okay.

71:46:14 CC 30 seconds.

71:46:15 C How are we doing on time, Sir?

71:46:17 C 30.

71:46:18 C Get the time to Retro.

71:46:19 P 1, 2, 3, 4 -

71:46:24 P Okay. And T<sub>R</sub> minus 10. Give me a Mark on 10. I'm on the Auto Retro.

71:46:27 C Get ready.

71:46:31 P Okay. I'm going to arm it, Tom.

71:46:33 C Okay.

71:46:34 P I'm ARM Retro. All set for MANUAL RETROFIRE.

71:46:35 CC 10, 9, 8, 7, 6, 5, 4, 3, 2, 1

71:46:44 CC RETROFIRE!

71:46:47 C Good one, baby!

71:46:49 P Come on. Keep going, baby!

71:46:50 P 2, 3, -

71:47:01 P - 4, delay on that one.

71:47:09 P 4 good Retros.

71:47:11 CC Roger.

## CONFIDENTIAL

71:47:12 C Was it 3?

71:47:16 P Okay, Tom. Turn your Retrofire START COMP light on - -

71:47:19 C Okay. IVI's read 296 aft, 4 right, 125 down.

71:47:29 CC Roger Say again your 4.

71:47:31 C Roger. 296.

71:47:32 CC 296. Sounds like a good one.

71:47:35 P Ready. Go.

71:47:36 P Okay, Tom. Here goes the Retro Adapter.

71:47:46 P Okay. I guess we're coming home, baby.

71:47:48 C I guess so.

71:47:53 P Okay. Set your clock for 3 three minutes. I'll give you a 3-minute time hack.

71:47:57 P Okay. Retro jettison armed. Retro-Jett was pushed and we got RETRO JETT.

71:48:02 C Confirm that, too.

71:48:04 P Okay. Your on RCS Ring-A and in pulse. We're in REENTRY. START COMP light did come ON.

71:48:11 C START COMP light, ON.

71:48:13 P And we're in a minute and a half.

71:48:16 P Okay. Confirm Retro-Jett. On time, Bill.

71:48:18 C Roger. Retro-Jett on time, Bill.

71:48:20 CC Roger. Tom.

71:48:22 C IVI's still read 296 up, 4 right, and 125 down.

71:48:26 CC Roger. Thank you.

71:48:32 C And we're rolling inverted at this time.

CONFIDENTIAL



# CONFIDENTIAL

333

71:48:34 CC Roger, Copy.

71:48:35 P Stopping. 296 aft, 4 right.

71:48:41 P Is that right? 125 down. Now left to 981, 12.

71:49:15 C ... We get 3 ...

71:49:16 P Say again.

71:49:18 C 46, 44, - 49 - -

71:49:20 P Okay. Coming up on 3 minutes, Tom. I'll give you a hack.

71:49:31 P Okay. Your Retro Power is SAFE.

71:49:32 C Go.

71:49:33 P Retro-Jett, SAFE.

71:49:34 C Go.

71:49:35 P Retro Rocket squibs, SAFE.

71:49:37 C Go.

71:49:38 P FDR-Computer.

71:49:42 P Stand by for the time hack, Tom. 2 seconds. Ready?

71:49:46 P UP.

71:49:51 P Okay. You got started, didn't you?

71:49:53 C Yes.

71:49:55 P Okay. FDI scale HIGH. Our RCS Control Power B, OFF. Attitude Control, PULSE. Boost Insert Control 1 and 2 circuit breakers, OPEN.

71:50:06 P Retro Sequence Control 1 and 2, OPEN. And the Scanner switch is OFF.

71:50:16 P Tighten and lock restraint harness. Check hatch pawls, NEUTRAL. Check Thermo circuit breaker,

# CONFIDENTIAL

## CONFIDENTIAL

OPEN. Okay. Fuel Cell Control 1 and 2 coming  
OPEN. ECS, all the heat is OFF.

71:50:49 P What do I put the Cabin Air Recirc valve at, 45?  
71:50:51 C 45.  
71:50:53 P Okay. 45.  
71:50:59 C You are roll and burn. FDR-COMP and FDM-ATTITUDE.  
Stations check as are. Report Check List complete.  
71:51:10 P Houston, Gemini IX. Our Post-Retro Check List is  
complete.  
71:51:15 CC Roger.  
71:51:20 P See, a minus 2. Minus 2, plus 13. Minus 2 and  
plus 13.  
71:51:55 P 65 degrees would be the back-up, Tom.

## HAWAII

71:52:01 CC Gemini, Hawaii.  
71:52:03 C Hawaii, Gemini IX.  
71:52:04 CC Roger. If you'll set 6 minutes in your elapsed  
timer I'll give you a hack on time since Retrofire.  
71:52:14 CC 30 seconds.  
71:52:20 P Roger. We're counting now on the event timer but  
go ahead and give us a hack at 6 minutes, Hawaii.  
71:52:25 CC Roger. Will do.  
71:52:32 P Yes. The back-up would be 65 degrees.  
71:52:43 CC 3, 2, 1,  
71:52:45 CC MARK.  
71:52:51 P Roger. We're on it.

CONFIDENTIAL

# CONFIDENTIAL

335

71:52:54 CC Gemini IX, Hawaii.

71:53:03 CC Gemini IX, Hawaii.

71:53:07 C Hawaii, Gemini IX. We were inverted and we have an inverted horizon.

71:53:12 CC Roger. Were you with me over the Mark?

71:53:14 C We're right on it.

71:53:16 CC Roger.

71:53:17 CC Do you have air AUTO RETRO?

71:53:18 C Sure did. Had the Automatic Retro 296 aft, 4 right, and 125 down.

71:53:29 CC Roger. Your attitude is normal.

71:53:31 C Right on the money.

71:53:32 P Okay, Tom. Back-up with this time. 65 degrees and we will reverse bank 3 seconds earlier than what they gave us.

71:53:42 CC Okay?

71:53:44 C That's affirm.

71:53:46 C Couldn't we get a lot of these switches off now? You get the Maneuver Thrusters, I'll get all these - -

71:53:50 P Okay. You get those on that side, and I'll take a look at what we have over here.

71:54:01 C - - These Attitude Control and Fuel and Temperature are all OFF. Cryo Quantity is OFF. Okay, Turn the Heater - Left Heater is OFF. Right Heater is OFF. Fuel Cell is OFF.

71:54:29 P Okay, Tom. You were at nominal. Aft was 296, you had 298. And nominal up/down was 112 and you had 125.

71:54:43 P Boy! There was a delay between the third and

# CONFIDENTIAL

## CONFIDENTIAL

fourth retro.

71:54:46 C Yes.

71:54:47 P Boy, oh boy!

71:54:50 P Okay. You've got the P and the 400K over there, right?

71:54:55 C Check.

71:54:58 P Okay. I'm all set till we get to 70K.

71:55:02 C Okay. Lock. Retro aft. Understand ... to left. Start blackout.

71:55:11 CC Gemini IX, Hawaii. We have 1 minute to LOS and standing by.

71:55:14 C Roger, Hawaii. See you back in Houston.

71:55:17 CC Roger.

71:55:22 P That's a real kick, isn't it?

71:55:24 C Real long steady -

71:55:26 P Man! I tell you though, I waited a long time for that fourth retro.

71:55:35 P Okay, Tom. Let's fly the Reentry the way we can.

71:55:38 C Power on ...

71:55:49 C Okay ...

71:55:59 P What time is it? I've got all the Fuel Cell switches OFF and my circuit breaker panel's OFF - or I can get it OFF. And we can get all these pumps OFF. We don't have them any more, do we?

71:56:09 C Fuel Pumps coming OFF.

71:56:11 P Okay.

71:56:14 P And what was tape time, Tom?

71:56:20 C 19 plus 52.

CONFIDENTIAL

71:56:37 P 18 plus 52. Okay. I've got that written down. It's back here, though.

71:56:41 C Get ready and I'll call them off before I hit it on.

71:56:47 P Okay.

71:56:48 C I've got the jettison right there.

71:57:06 C How about a little computer.

71:57:09 P You bet your life it came on normally. I would push START COMP - I don't want it to freeze so - -

71:57:19 P Yes. Let's see, we've got 2300 in Ring A, 2300 in Ring B.

71:57:23 C ...

71:57:26 P And we're using the remainder at this time. Scanners are OFF; Gyros are ON; Radar is OFF. I guess we can't push much else off, Tom.

71:57:40 C All set on you? Over there on the pulse?

71:57:46 P Yes. All set.

71:57:47 C Really going to feel good to feel these g's. I'm not kidding you.

71:57:50 P How high do you think we'll get up there?

71:57:52 C ... what we had going out on lock.

71:57:55 P Oh, really?

71:57:56 C Packed itself way down.

71:58:34 P Picked up sunlight.

71:58:36 P Oh boy!

71:58:41 C That's it now. There's no doubt about it.

71:58:43 P Man, that's - that's really - really something!

71:58:53 P You got that horizon? I don't see the horizon.

## CONFIDENTIAL

71:58:55 C Had it for a second.

71:58:58 P Okay.

71:59:35 P Well, we're still moving east, according to the computer.

71:59:39 C Well, I've got the horizon out there now. Look.

71:59:48 P Boy! That's pretty out there, Tom.

71:59:51 C Far as seeing sights, you haven't seen anything yet. Wait till you see the big fireball.

72:00:44 P What's all that stuff coming out there behind us?

72:00:46 C Oh, just some pyro.

72:00:50 P Why did you start retro pack just now?

72:00:53 C The retro pack will be behind us and above us and look like it's up there.

72:01:14 P There's that horizon.

72:01:27 P If you want to, go to left to 50 degrees.

72:01:29 C Okay.

72:01:45 P I've got to show a little bias in that last bit of information I gave you.

72:01:48 CC Hello, Gemini IX. This your Houston Prime Contractor standing by.

72:01:49 P I said 65, but that s based on 55 being nominal. So it would be bank left 60 degrees, Tom, in case we lose the computer.

72:02:09 P And it would be reverse main type.

72:02:37 P Okay? If we lose comp at left bank 60, and reverse bank on time, or would it be bank left 60 and bank right - let's see - 50.

72:03:30 P We're over the US.

72:03:56 C Retro bank nominal is left 50 degrees.

CONFIDENTIAL

# CONFIDENTIAL

339

72:03:57 P Retro bank nominal is left 50 degrees. Got that written down there?

72:04:02 C Yes.

72:04:03 P If you don't, I'll look it up again.

72:04:10 C The right ...

72:04:12 P Okay. If you've got it, I won't look it up. Left 50 degrees I'm sure but those numbers I gave you were back-up angles - back-up "lost comp angles" based upon our Retrofire. I feel certain we'll get an update here pretty sudden anyway.

72:04:52 P Bank left 50, bank right 60. You have the other numbers now? Okay.

72:05:13 P There's the moon up there.

## TEXAS

72:05:18 CC Okay, Gemini IX. We're ready with the Retro update when you're ready to copy.

72:05:24 P Go.

72:05:25 CC 400K is 19 plus 37. Skip down to blackout. That's 22 plus 01; end blackout, 27 plus 07; drogue, 28 plus 43; main, 30 plus 08. Your downrange needle deflection, 10 plus 94.

72:05:50 P Roger. We've got our 400K, 19 plus 37; blackout, 22 plus 01; and blackout, 27 plus 07; drogue at 28 plus 43; main at 30 plus 08; downrange, 10 plus 94.

72:06:11 P Okay. 400K is 19 plus 37, Tom.

72:06:25 CC There's a - that looks like it was based on your IYI's. We'll be getting you any other data we can from radar.

72:06:32 P Roger. Understand.

# CONFIDENTIAL

## CONFIDENTIAL

72:06:35 C Hey, and we have the deflection within one second  
LOOK!

72:06:38 CC Very good.

72:06:42 C Going to roll left 50 degrees.

72:06:44 P Okay, Tom. Roll left 50.

72:07:05 C Real good beginning.

72:07:17 CC Gemini IX, Houston. Got your bank angle?

72:07:23 C Roger. We're rolling left 50 right now.

72:07:29 CC Okay. Your back-up bank angles are 28 degrees  
left, and bank right 38. RET RB is 25 plus 27.

72:07:40 P Back-up bank left 28; bank right 38; RET RB 25  
plus 27.

72:07:45 CC Roger.

72:07:46 C Check.

72:07:53 P That's back-up, Tom. 50 degrees. Go to 50 de-  
grees.

72:07:57 C Okay.

72:07:58 P Okay. This is back-up angle of 50 degrees.

72:08:01 C What's our status?

72:08:03 P They haven't had any banks yet, have they?

72:08:05 C Yes.

72:08:32 C ...

72:08:35 P Yes.

72:08:37 P Okay. Even the computer is GO, Tom.

72:08:38 CC See you after blackout.

72:08:39 C Okay. Go ahead. Put it on, Gene.

CONFIDENTIAL



# CONFIDENTIAL

341

72:08:44 P Roger. Blackout is 22 plus 01.

72:08:59 P No Guidance yet, right?

72:09:01 C No.

72:09:03 P What time's that thing supposed to ring in?

72:09:19 P There's Guidance, Tom. Turn deflection in about 20, 40, 80, 120, miles. 120 miles. Want you to roll right for that position.

72:09:36 C Roll right? ... high?

72:09:39 C Say again.

72:09:40 C There's Guidance, Tom. Turn-rate needle deflection is about 20, 40, 80 - about 120 miles.

72:09:41 P Okay. It's coming in real nice.

72:09:45 P All for roll right.

72:09:47 C You want to fly it?

72:09:49 P Fly it. It looks good. That's what they said about 94 when we got 120.

72:09:53 C Okay.

72:09:54 P We just passed over Houston.

72:10:00 P Look at that!

72:10:05 P Okay. It's calling for bank right slightly. Push START COMP and a full left.

72:10:20 P Keep going now. You've got a good braking line, now.

72:10:48 P I got another minute and a half yet.

72:10:53 P Tell you when.

72:10:58 P Beautiful out here, isn't it?

72:11:00 P Okay. Still full left and earth is coming slowly, Tom.

# CONFIDENTIAL

## CONFIDENTIAL

72:11:07 P Starting to come in slowly and we're coming in at low range.

72:11:22 C ...

72:11:27 P Okay, She's coming in Tom, slowly. You're about 40 miles till earth. 40 miles to it. Still coming in closer. You can go ahead and turn it if you want to.

72:11:42 C Okay.

72:11:43 P Okay. It's beautiful. ...

72:11:50 P Okay. Now we're going to start rolling downrange just about any time. Crossrange looks real good.

72:12:00 P Boy! What a fireball! Whew!

72:12:02 P Okay. Commanding you roll right. What a fireball!

72:12:14 P Boy! We're really doing something, aren't we?

72:12:18 C 2 g's.

72:12:20 P Okay.

72:12:21 C 2 g's.

72:12:22 P Boy! It's just about 5.

72:12:24 P Okay. Still holding on. The time is just about out.

72:12:26 C That's good enough. Boy, look at that fire!

72:13:06 P Okay. GO on roll right, Tom.

72:13:11 P Beautiful!

72:13:12 C Keep rolling right.

72:13:22 P I wish I could catch up with those numbers like he can.

72:13:26 C Keep rolling right.

CONFIDENTIAL

# CONFIDENTIAL

343

72:13:29 P Keep it rolling right. Beautiful!

72:13:47 C Beautiful!

72:13:50 C Roger.

72:13:51 P Okay.

72:14:05 C I think we're coming at it.

72:14:07 CC Gemini IX, Houston. You're drogue and main times are good.

72:14:16 C Roger. Can you read me?

72:14:27 CC Read you loud and clear.

72:14:32 C We are absolutely GO.

72:14:34 CC Very good.

72:14:48 C We're rolling to the left. 2-1/2 feet.

72:14:56 CC Roger. We're with you.

72:15:00 P You're right over the top of it. You're right over the top of it; right over the carrier.

72:15:08 P Right over the top of it right now. You're barely in sight.

72:15:16 CC Gemini IX, West Lant. You're on.

72:15:17 C Roger. West Lant. We're ... coming down.

72:15:19 CC Gemini IX, give us your reading. Over.

72:15:21 C Roger. Stand by.

72:15:25 C ...

72:15:29 P Okay.

72:15:33 CC ... West Lant. We have you on radar in our vicinity. Do have your position. Over.

72:15:44 CC Stand by for the drogue.

# CONFIDENTIAL

## CONFIDENTIAL

72:15:46 C Okay.

72:15:48 C Drogue.

72:15:50 P There it is!

72:15:53 C We've got the drogue out. Coming down.

72:15:58 CC Where are you, Gemini IX? Are you braking now?  
I can hear you but I can't read. Keep talking.

72:16:02 P Gemini IX. Roger. Estimating about 2 miles over  
the target. 2 miles long.

72:16:10 CC Roger. Understand your estimating close to here.

72:16:14 P Roger. Estimating 2-1/2 miles long. 2-1/2 miles  
long.

72:16:18 CC 2-1/2 miles from Wasp. We concur.

72:16:24 C Liquid coming over the cockpit. Better get your  
gear because ...

72:16:34 C At 20,000 feet ... How are we doing?

72:16:37 CC Roger, Gemini IX.

72:16:48 C How is the cockpit?

72:16:50 P Don't ask me.

72:16:55 P We don't have a main yet.

72:16:57 C Okay.

72:17:00 C This is Gemini IX. Estimating 3.3 miles long.  
3.3 miles long.

72:17:05 CC Roger. You are estimating 3.3 miles long.

72:17:09 P Roger.

72:17:12 C Stand by.

72:17:17 P There it is. Oh! Beautiful, baby!

72:17:19 C Beautiful!

CONFIDENTIAL

# CONFIDENTIAL

345

72:17:22 P Gemini IX. We're on the main chute at this time.

72:17:27 C Great.

72:17:29 P Beautiful! What a sight! Wish I had a picture of that.

72:17:33 C ...

72:17:36 P Yes, I do too.

72:17:39 C I'll go in that one.

72:17:40 P Okay.

72:17:41 C Let's hold on before we do our ...

72:17:42 P Okay.

72:17:43 P Gemini IX. Estimating 3.5 miles long. We're on the main this time.

72:17:49 C Switch now?

72:17:52 P Okay. What didn't I do?

72:17:54 C You got everything done.

72:17:56 P Okay. I gave them an estimate.

72:17:58 C Okay. Your ready to go to ADF.

72:17:59 P Okay. Do you want to cut these off?

72:18:01 C Okay.

72:18:02 P Okay.

72:18:04 C Put ...

72:18:08 P Hope they don't burn it.

72:18:12 P Okay, Tom. Do you want - -

72:18:17 C Stand by to go to Landing Attitude.

72:18:18 P - - Okay.

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72:18:19 C Ready.

72:18:21 CC Okay. Gemini IX ... we have you directly ahead of the Wasp visually. Over.

72:18:22 P Ready. ... Wasp manually over. Wasp. Roger. Have you got two points? We're going down. Give my congratulations to your Captain Hartley for being on the spot.

72:18:31 CC Roger, Gemini. Welcome aboard.

72:18:41 C Roger. We thank you.

72:18:44 P ... 6 ... 63.6.

72:18:51 C Have you got us tracked?

72:18:53 CC Roger. West Lant. radar affirmative. Everybody in the Station says you're about 2 miles ahead.

72:18:55 C Roger. Hope you've got us on TV.

72:19:00 CC Roger. You will be, very shortly. Careful.

72:19:03 C Altitude, 3000 feet.

72:19:07 P Okay, Tom. Post-Main Check List.

72:19:09 CC Roger. We have you in sight.

72:19:14 C Roger. I've got a tapper up here some place.

72:19:18 P Okay. We're on the rescue beacon.

72:19:21 P My ACQ is OFF.

72:19:24 P My ACQ is OFF.

72:19:27 CC Gemini IX. You're on TV. ...

72:19:29 C How about that?

72:19:36 C Whew!

72:19:37 P The Computer switch, OFF.

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# CONFIDENTIAL

347

72:19:41 C Tell Captain Hartley we'd like to come aboard shortly, in the Spacecraft.

72:19:43 CC Roger. Bring you up on the elevator.

72:19:48 C Sounds good to us, Sir.

72:19:50 CC Number 207.

72:19:52 CC Roger. ...

72:19:54 P Tom, I see it out there. It's a good ... too, right?

72:19:55 C (Laughter)

72:19:56 P It was a good distance, too, right? Just missed it. Look at all the stuff I've got around my feet here.

72:20:02 C Okay. We'll stand by now and I'll get that, once we hit the water.

72:20:06 P What time do we hit?

72:20:07 C About 1500 feet.

72:20:09 P Make sure your pin is in.

72:20:10 C Okay. My pin is in.

72:20:20 P Computer, OFF.

72:20:21 CC Gemini IX, what's your altitude? Over.

72:20:24 C Roger. Passing 900 feet.

72:20:26 CC Roger.

72:20:29 C Roger. Put a clamp to the ...

72:20:30 CC Coming into sight. The R and R Section has hit the water.

72:20:31 P Oops! I'll get it.

72:20:36 P Okay. Let's go to OFF on the Platform ... section.

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72:20:39 P I'm not sure we'll pick up narrative upon landing ...

72:20:43 P SPLASHDOWN! Go ahead, Tom.

72:20:50 C We're on our way in, hang on.

72:20:52 P Son-of-a-gun! Excuse my language.

72:20:54 P Whew! Golly!

72:20:57 C That was the worst of the whole shebang.

72:20:58 P Man! That was a real hit!

72:21:06 C Oh, we're leaking. We're leaking water, too.

72:21:11 C This is Gemini IX. We're starting to leak water. Get this thing ...

72:21:14 P Let's ... the ... valve open.

72:21:15 C Get the swimmers over here ASAP!

72:21:22 C Boy, something popped.

72:21:24 P Whew! Boy, did we get hot. Yes, we're leaking water.

72:21:31 C Hello. What's your - -

72:21:33 P We got a partial puncture, I think, Tom.

72:21:35 CC ...

72:21:36 CC ... they are flying right now. Over.

72:21:40 C ... Roger. Out.

72:21:44 C Roger ... we're starting to leak a little water ...

72:22:13 CC ... save ... and pick up that parachute ... right quick ... Spacecraft. Over.

72:22:38 C Roger. Okay. When we hit, we sprung a bulkhead and have a little water ... we get ...

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# CONFIDENTIAL

349

72:22:49 CC Gemini IX. This ... Leader. We're estimating 45 minutes to pick you up. Over.

72:22:56 C Well, we're in good shape here.

72:23:02 CC ...

72:23:43 CC The collar is around the Spacecraft now and it has not yet been inflated. The swimmers are still attaching the final point. The Spacecraft looks in good shape.

72:23:56 C ... Roger.

72:26:38 C ...

72:26:46 CC The raft is now attached to the collar - -

72:26:48 C ...

72:26:54 C ...

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